Philips Consumer Electronics

Technical Service Data

Service and Quality
Service Publications Dept.
One Philips Drive
P.O. Box 14810
Knoxville, TN 37914

Manual 5871
Model no.: CCB130AT01
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Pg. SCHEMATIC DIAGRAMS AND PC BOARDS

1. WIRING DIAGRAM
2. MAIN 1/4 SCHEMATIC
3. MAIN 2/4 SCHEMATIC
4. MAIN 3/4 SCHEMATIC
5. MAIN 4/4 SCHEMATIC
6. HV/CRT SCHEMATIC
7. MAIN CBA TOP VIEW
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10. HV CBA BOTTOM VIEW
11. CRT CBA TOP & BOTTOM VIEW
12. JUNCTION CBA TOP & BOTTOM VIEW

REFER TO SAFETY GUIDELINES

SAFETY NOTICE: ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

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Safety Notes

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GENERAL SAFETY NOTES

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various **CAUTIONS** and **NOTICES** which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these **CAUTIONS** and **NOTICES ARE NOT EXHAUSTIVE**. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

WARNING

Critical components having special safety characteristics are identified with a ⚠ or "**S**" by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views. Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

- Broken Line _____ _ _____ _ _____ _ _____

SAFETY CHECKS

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to Your customer. Be sure to check all of the following:

FIRE AND SHOCK HAZARD
IMPLOSION
X-RADIATION
LEAKAGE CURRENT COLD CHECK
LEAKAGE CURRENT HOT CHECK
PICTURE TUBE REPLACEMENT

FIRE AND SHOCK HAZARD

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.

2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.

3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.

4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.

5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.

6. Critical components having special safety characteristics are identified with an '**S**' by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematic diagrams and /or exploded views.

7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.

8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.

9. After reassembly of the unit, always perform an **ac leakage test** or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc., to be sure the unit may be safely operated without danger of electrical shock.

* **Broken line** _____ _ _____ _ _____ _ _____

IMPLOSION

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.

2. Use only replacement tubes specified by the manufacturer.

X-RADIATION

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.

2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.

3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.

4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.

5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.

7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.

8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

LEAKAGE CURRENT COLD CHECK

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.

2. Turn on the power switch.

3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.

LEAKAGE CURRENT HOT CHECK

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.

2. Connect a **1.5k, 1OW resistor** paralleled by a **0.15uF. capacitor** between each exposed metallic cabinet part and a **good earth ground** such as a water pipe, as shown below.

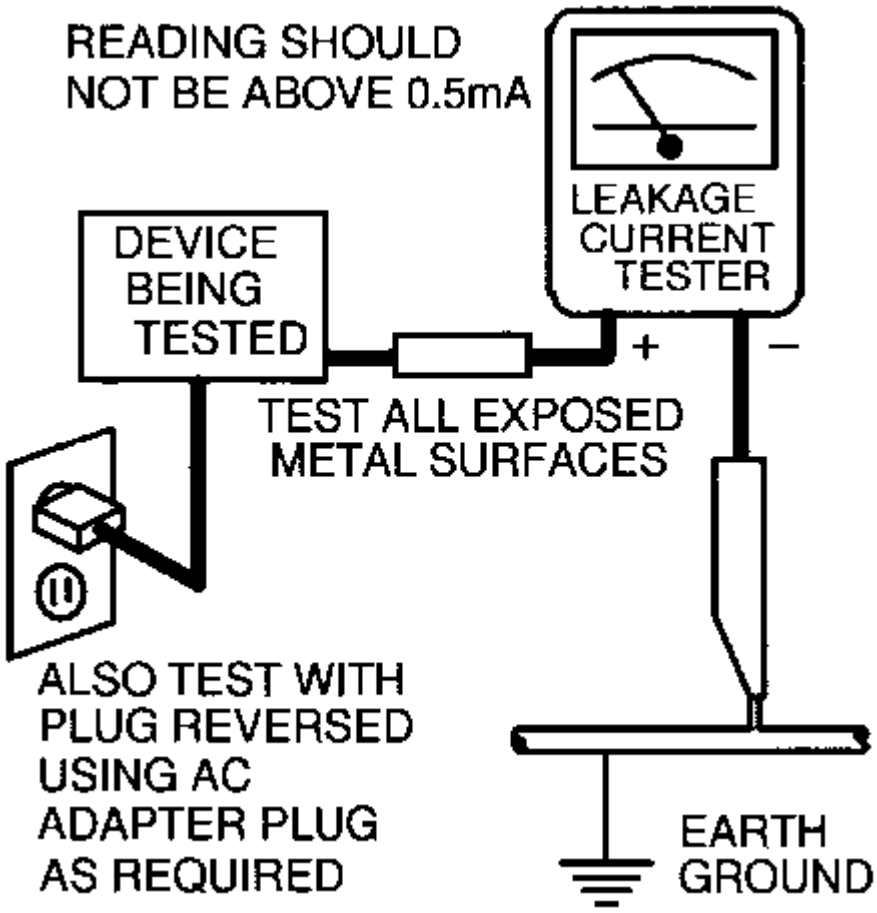
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.

4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5milliamp. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.

5. **Repeat the above procedure with the ac plug reversed.** (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

OR

With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. **(Do not use an isolation transformer during this test.)** Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). **With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat the test. See graphic below.**



PICTURE TUBE REPLACEMENT

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

PARTS REPLACEMENT

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

TV SAFETY NOTES

SAFETY CHECKS
IMPLOSION

X-RADIATION
PICTURE TUBE REPLACEMENT
PARTS REPLACEMENT

WARNING

Before removing the CRT anode cap, turn the unit **OFF** and short the **HIGH VOLTAGE** to the **CRT DAG** ground.

SERVICE NOTE: The **CRT DAG** is not at chassis ground.

TV-VCR COMBI SAFETY NOTES

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

SAFETY PRECAUTIONS FOR TV CIRCUITS

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

   a. Be sure that no built-in protective devices are defective or have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.

   b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

   c. Do a **LEAKAGE CURRENT CHECK**

ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

d. **X-Radiation and High Voltage Limits** - Because the picture tube is the primary potential source of X-radiation in solid-state TV receivers, it is specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place. High voltage must be measured each time servicing is performed that involves B+, horizontal deflection or high voltage. Correct operation of the X-radiation protection circuits also must be reconfirmed each time they are serviced. (X-radiation protection circuits also may be called "horizontal disable" or "hold down.") Read and apply the high voltage limits and, if the chassis is so equipped, the X-radiation protection circuit specifications given on instrument labels and in the **Product Safety & X-Radiation** Warning note on the service data chassis schematic. High voltage is maintained within specified limits by close tolerance safety-related components/adjustments in the high-voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. **Design Alteration Warning** - Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer' s warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4**. Picture Tube Implosion Protection Warning** - The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; because of potential hazard, do not try to remove such "permanently attached" yokes from the picture tube.

5. **Hot Chassis Warning**

a. Some TV receiver chassis are electrically connected directly to one conductor of the ac power cord and may be serviced safely without an isolation transformer only if the ac power plug is inserted so that the chassis is connected to the ground side of the ac power source. To confirm that the ac power plug is inserted correctly, with an ac voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the ac power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.

b. Some TV receiver chassis normally have 85Vac (RMS) between chassis and earth ground regardless of the ac plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the ac power source, for both personnel and test equipment protection. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the ac power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: **a.** near sharp edges, **b.** near thermally hot parts - be sure that leads and components do not touch

thermally hot parts, **c.** the ac supply, **d.** high voltage, and **e.** antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check ac power cord for damage.

7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

PRECAUTIONS DURING SERVICE

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:
1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:
1) Insulation Tape
2) PVC tubing
3) Spacers
4) Insulators for transistors

E. When replacing ac primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

G. Check that replaced wires do not contact sharp edged or pointed parts.

H. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. **Crimp type wire connector**
When replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, in order to prevent shock hazards, perform carefully and precisely the following steps.

Replacement procedure
1) Remove the old connector by cutting the wires at a point close to the connector. **Important:** Do not re-use a connector (discard it).

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4) Use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the VCR connectors, first, disconnect the ac plug from the ac supply socket.

SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

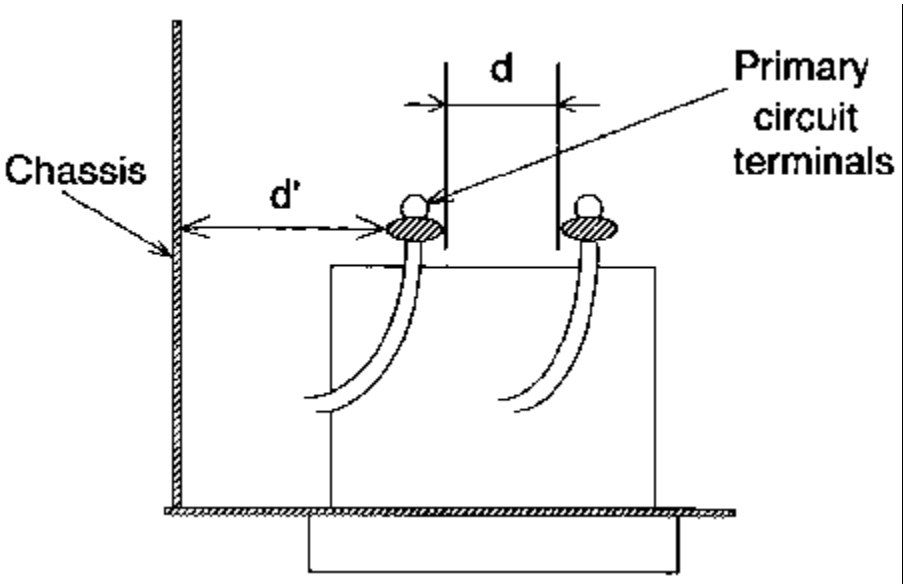
1. **Clearance Distance**

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See graphic bllow)

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
110 to 130 V	USA or CANADA	> 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.



2. **LEAKAGE CURRENT CHECKS**

VCR SAFETY NOTES

FIRE & SHOCK HAZARD (VCR)

1. Be sure that all components are positioned in such a way to avoid possibility of shorts to adjacent components. This is especially important on those chassis which are transported to and from the repair shop.

2. Always replace all protective devices such as insulators and barriers after working on a set.

3. Check for damaged insulation on wires including the ac cord.

4. Check across-the-line components for damage and replace if necessary.

5. After re-assembly of the unit, always perform an ac leakage test on the exposed metallic parts of the cabinet such as the knobs, antenna terminals, etc. to be sure the set is safe to operate without danger of electrical shock. **Do not use a line isolation transformer during this test.** Use an ac voltmeter having 5000 ohms per volt or more sensitivity in the following manner: Connect a 1500 ohm 10 wan resistor, paralleled by 0.15 MFD ac type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the ac voltage across the combination 1500 ohm resistor and 0.15 MFD capacitor. Reverse the ac plug on the set and repeat ac voltage measurements again for each exposed metallic part. Voltage measured must not exceed 0.6 volts R.M.S. This corresponds to 0.4 milliamp ac. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

GENERAL

Power Supply-This receiver is designed for operation on 120 Volts, 60Hz alternating current (ac) only. Never connect to a supply having a different frequency or voltage.

IMPORTANT NOTICE

This device employs many circuits, components, and mechanical parts designed for protection against fire, shock and RF interference. For continued safety any servicing should be performed by qualified personnel and exact replacement parts should be used. Under no circumstances should the original design be altered.

PRODUCT SAFETY GUIDELINES FOR ALL PRODUCTS

CAUTION: Do not modify any circuit. Service work should be performed only after you are thoroughly familiar with all of the following safety checks. Risk of potential hazards and injury to the user increases if safety checks are not adhered to.

USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

PREVENTION OF ELECTROSTATIC DISCHARGE (ESD)

Some semiconductor solid state devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices, Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate an electrical charge sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your feet from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device.)

NOTE to CATV system Installer:
This reminder is provided to call the CATV system installer' s attention to article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

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Mechanical Adjustments

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CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

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DISASSEMBLY INSTRUCTIONS

Cabinet and Main Assemblies

Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts, and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.

Click here for Disassembly Flowchart

Caution !

When removing the CRT, be sure to discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

Disassembly Method (CCB132)

STEP/ LOC. NO.	PART	REMOVAL		
		FIG. NO.	REMOVE/ UNLOCK/RELEASE/ UNPLUG/ UNCLAMP/DESOLDER	NOTE
[1]	Rear Cabinet	1, 2, 3, 4	4(S-1), (S-2)	1
[2]	H/V CBA(With Holder)	5, 7	Anode Cap, CRT CBA, CL501A, CN503, CN571, CN575, CN602 2(S-3), 2(L-1)	2
[3]	TrayChassis	5	CN601, CN801	3
[4]	Deck Unit	5	7(S-4), 1(S-5)	4
[5]	Main CBA	5, 7	6(S-6)	5
[6]	CRT	6	4(S-7)	6

[1] **[2]** **[3]** **[4]** **[5]**

[1] Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the identification (location) No. of parts in figures.

[2] Parts to be removed or installed.

[3] Fig No. showing procedure of part location

[4] Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desloder

2(S-2) = two Screws (S-2)

[5] Refer to the following ”Reference Notes in the Table“

Reference Notes in the Table

1. Removal of the Rear Cabinet.
   Remove Screws 4(S-1) and 1(S-2)
   Caution!
   Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.
2. Removal of the H/V CBA with Holder. Discharge the Anode lead of the CRT with the CRT Ground Wire before removing the Anode Cap.
   Disconnect the following: Anode Cap, CRT CBA, CL501A, CN503, CN571, CN575, and CN602.
   Remove 2(S-3). Unlock 2(L-1). Pull the H/V CBA backward.
3. Removal of the Tray Chassis. Disconnect CN601 and CN801. Pull the Tray Chassis backward.
4. Removal of the Deck Unit. Remove 7(S-4) and 1(S-5). Lift up the Deck Unit.
5. Removal of the Main CBA. Remove 6(S-6). Lift up the Main CBA.
6. Removal of the CRT. Remove 4(S-7) and pull the CRT backward.

Disassembly Method (CCB255)

STEP/ LOC. NO.	PART	REMOVAL		
		FIG. NO.	REMOVE/*UNLOCK/ RELEASE/UNPLUG/ UNCLAMP/DESOLDER	NOTE
[1]	Rear Cabinet	1, 2	6(S-1), 1(S-2)	1
[2]	Power Supply CBA	3, 5	1(S-3) Anode Cap, CRT CBA, CN301, CN302, CN571, CN603	2
[3]	Tray Chassis	3	CN801	3
[4]	Deck Unit	3	7(S-4)	4
[5]	Main CBA	3, 5	3(S-5), 1(S-6)	5
[6]	CRT	4	4(S-7)	6

[1] **[2]** **[3]** **[4]** **[5]**

[1] Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the identification (location) No. of parts in figures.

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S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desloder
e.g., 2(S-2) = two Screws (S-2)

[5] Refer to the following ”Reference Notes in the Table“

Reference Notes in the Table

1. Removal of the Rear Cabinet. Remove screws 6(S-1) and 1(S-2).

Caution!
Discharge the Anode Lead of the CRT with the cRT Ground Wire before removing the Anode Cap.

2. Removal of the Power Supply CBA. Discharge the Anode Lead of the CRT with the CRT ground wire before removing the Anode Cap.
   Disconnect the following: Anode Cap, CRT CBA, CN301, CN302, CN571, CN603.
   Remove 1(S-3).

4. Removal of the Tray chassis. Disconnect CN801, then slide Tray chassis backward.
5. Removal of the Deck Unit. Remove 7(S-4). Lift up the Deck Unit.
6. Removal of the Main CBA. Remove 3(S-5) and 1(S-6). Pull the Main CBA.
7. Removal of the CRT. Remove 4(S-7) and pull the CRT backward.

Disassembly Method (VRB130, 190)

STEP/ LOC. NO.	PART	REMOVAL		
		FIG. NO.	REMOVE/ UNLOCK/RELEASE/ UNPLUG/ UNCLAMP/DESOLDER	NOTE
[1]	Rear Cabinet	1, 2, 3, 4	4(S-1), (S-2)	1
[2]	H/V CBA(With Holder)	5, 7	Anode Cap, CRT CBA, CL501A, CN503, CN571, CN575, CN602 2(S-3), 2(L-1)	2
[3]	TrayChassis	3, 5	CN601, CN801	3
[4]	Deck Unit	3	7(S-4), 1(S-5)	4
[5]	Main CBA	3	6(S-6)	5
[6]	CRT	4	4(S-7)	6

[1] **[2]** **[3]** **[4]** **[5]**

[1] Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the identification (location) No. of parts in figures.

[2] Parts to be removed or installed.

[3] Fig No. showing procedure of part location

[4] Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desloder

2(S-2) = two Screws (S-2)

[5] Refer to the following ”Reference Notes in the Table“

Reference Notes in the Table

1. Removal of the Rear Cabinet.
   Remove Screws 4(S-1) and 1(S-2)
   Caution!
   Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.
2. Removal of the H/V CBA with Holder. Discharge the Anode lead of the CRT with the CRT Ground Wire before removing the Anode Cap.
   Disconnect the following: Anode Cap, CRT CBA, CL501A, CN503, CN571, CN575, and CN602.
   Remove 2(S-3). Unlock 2(L-1). Pull the H/V CBA backward.
3. Removal of the Tray Chassis. Disconnect CN601 and CN801. Pull the Tray Chassis backward.
4. Removal of the Deck Unit. Remove 7(S-4) and 1(S-5). Lift up the Deck Unit.
5. Removal of the Main CBA. Remove 6(S-6). Lift up the Main CBA.
6. Removal of the CRT. Remove 4(S-7) and pull the CRT backward.

Disassembly Method (VRB092)

STEP/ LOC. NO.	PART	REMOVAL		
		FIG. NO.	REMOVE/*UNLOCK/ RELEASE/UNPLUG/ UNCLAMP/DESOLDER	NOTE
[1]	Rear Cabinet	1, 2	4(S-1), 1(S-2), 2(S-3), (S-4)	1
[2]	H/V CBA	3, 5	Anode Cap, CRT CBA, CL501A, CN503,CN571,CN575,CN602, Unclamp H/V CBA	2
[3]	Power Supply CBA	3, 5	CN1601,CN603,3(S-6),2(L-1), 4(S-7)	3
[4]	Tray Chassis	3, 5	CN802	54
[5]	Deck Unit	3, 5	6(S-8)	5
[6]	Main CBA	3, 5	4(S-9)	6
[7]	CRT	4	4(S-10)	7

[1] **[2]** **[3]** **[4]** **[5]**

[1] Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the identification (location) No. of parts in figures.

[2] Parts to be removed or installed.

[3] Fig No. showing procedure of part location

[4] Identification of part to be removed, unhooked, unlocked, released,

unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desloder

2(S-2) = two Screws (S-2)

[5] Refer to the following ”Reference Notes in the Table“

Reference Notes in the Table

1. Removal of the Rear Cabinet. Remove screws 4(S-1), 1(S-2) and 2(S-3) and 2(S-4).
2. Removal of the H/V CBA. Discharge the Anode Lead of the CRT with the CRT ground wire before removing the Anode Cap.
   Disconnect the following: Anode Cap, CRT CBA, CL501A, CN503, CN571, CN575, CN602 and unclamp the H/V CBA.
3. Removal of the Power Supply CBA. Disconnect CN1601 and CN603. Slide Power Supply CBA holder backward. Remove screws 2(S-6). Slide the Power Supply CBA Holder backward. Remove screws 4(S-7) and release 2(L-1). Pull the Power Supply CBA backward.
4. Removal of the Tray chassis. Disconnect CN802, then slide Tray chassis backward.
5. Removal of the Deck Unit. Remove screws 7(S-8). Lift up the Deck Unit.
6. Removal of the Main CBA. Remove screws 4(S-9).
7. Removal of the CRT. Remove screws 4(S10) and pull the CRT backward.

Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See **Fig DM3**.) When reassembling, start with the unit in Cassette-in mode and follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder	T	DM17	2(S-1)	
[2]	[1]	Slider Gear	L,R	DM16, DM17	*4(L-2)	Eject Position
*[3]	[2]	Slider Shaft	T	DM16, DM17		Eject Position
[4]	[4]	Cassette Plate	T	DM17	2(S-2)	
[5]	[4]	Slider L	T	DM17		
[6]	[4]	Slider R	T	DM17	(S-3)	
[7]	[6]	Door Opener A		DM17		
[8]	[8]	Lock Lever		DM17	(S-4), *(P-1)	
[9]	[3]	Cassette Guide R		DM17		
[10]	[3]	Cassette Guide L	R	DM17		
[11]	[11]	Joint Holder A	L	DM17	(S-5), *(P-2)	
[12]	[11]	Cassette Drive Sub Gear	R	DM17, DM18		Eject Position
[13]	[11]	Cassette Drive	R	DM17, DM18		Eject Position

[13]	[11]	Cassette Drive Gear	R	DM17, DM18		Eject Position
[14]	[13]	Cassette Drive Lever	R	DM17	Cassette Drive Spring	Eject Position
[15]	[14]	Front Door Opener		DM17, DM18		

(1) **(2)** **(3)** **(4)** **(5)** **(6)** **(7)**

(1) Follow steps in sequence. When reassembling, follow the steps in reverse order. These numbers are also used as Identification (location) No. of parts in the figures.
(2) Indicates the part to start disassembling with in order to disassemble the part in column (1).
(3) Name of the part
(4) Location of the part: T=Top B=Bottom R=Right L=Left
(5) Figure Number
(6) Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder e.g., 2(L-2) = two Locking Tabs (L-2).
(7) Adjustment Information for Installation(+): Refer to Deck Exploded Views for lubrication.

***[3]: T**hey are divided into two steps because, before reassembling Slider Shaft, one Slider Gear must be preinstalled at either end of Slider Shaft.

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:
If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.
Alignment points in Eject Position

Alignment 1
Loading Arm, S and T Assembly
1. Install Loading Arm S and T Assembly so that their triangle marks point to each other as shown in **Fig. AL2**.

Alignment 2
Mode Gear
1. Keeping the two triangles pointing at each other, install the Loading Arm T Assembly so that the last tooth of the gear meets the most inside teeth of the Loading Lever Assembly. See **Fig. AL2.**

Tape Guide Arm Assembly

1. Measurement of the screw must be as specified in **Fig. AL3**.

Alignment 3

Cassette Drive Gear, Cassette Drive Sub Gear

Install the Cassette Drive Gear and Cassette Drive Sub Gear so that their triangle marks point to each other as shown in **Fig. AL4**.

Alignment 4

Cam Gear (A), Cassette Drive Sub Gear

Install the Front Loading Assembly so that the triangle mark of Cassette Drive Sub Gear is aligned with the indent of the Cam Gear (A) as shown in **Fig. AL4**.

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Rear Cabinet (Refer to CABINET DISASSEMBLY INSTRUCTIONS).
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt (B) in the appropriate direction shown in **Fig. M1** until the First Gear starts turning. Stop turning the LDG Belt (B). Then, turn the First Gear in the appropriate direction continuously. However, movement of the Cam Gear will be very slow. Allow a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Rear Cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS .)
3. Make sure that the Moving guide assemblies are in the Eject Position. When the Moving guide assemblies are in the Loading Position, go to step 4. When the Moving guide assemblies are in the Eject Position, go to step 6.
4. First, turn the LDG Belt (B) in the appropriate direction shown in **Fig. M1** until the First Gear starts turning.
5. Stop turning the LDG Belt (B) immediately after the First Gear starts turning.
6. Turn the First Gear in the appropriate direction until Moving guide assemblies come to the Eject Position. Stop turning when the assemblies begin clicking or can not be moved further. However, the tape will be left wound around the

cylinder.

7. Turn the LDG Belt (B) in the appropriate direction continuously, and the cassette tape will be ejected. As stated, movement of the Cam Gear will be very slow. Allow a minute or two to complete this task.

Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Rear Cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS.)
3. Turn the LDG Belt (B) in the appropriate direction shown in **Fig. M1**. Release the locking tabs shown in **Fig. M1** and continue turning the LDG Belt (B) until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Tape Interchangeability Alignment

Click here for Flowchart of Alignment for tape traveling

Note:
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to procedure 1-C, step 2.)

Equipment required:
Dual Trace OscilloscopeVHS Alignment Tape (VFMS0001H6)Guide Roller Adj. ScrewdriverX-Value Adj. Screwdriver

Note:
Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Preliminary/Final Checking and Alignment of Tape Path

Purpose:
To make sure that the tape path is well stabilized.

Symptom of Misalignment:
If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig **M3** and **M4**.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. **M3** and **M5.)**

Note: Beneath each Guide Roller, there is a small screw. (Refer to Fig. **M5**.) This screw works to apply adequate torque to the shaft of each Guide Roller so that the Guide Roller turns properly. Even when adjusting the height of the Guide Roller(s), do not touch these two small screws.

3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and AC Head.(Fig. **M3** and **M5**)

4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the AC Head. (**Fig. M6**)

1-B. X Value Alignment

Purpose:
To align the Horizontal Position of the Audio/Control/Erase Head.

Symptom of Misalignment:
If the Horizontal Position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Connect the oscilloscope to J149 [Models CCB130, 190] or TP004 [Model CCB092] (C-PB) and J152 [Models CCB130, 190] or TP008 [Model CCB092] (CTL) on the Main CBA. Use J96 [Models CCB130, 190] or TP005 [Model CCB092] (RF-SW) as a trigger.
2. Play back the Gray Scale of the Alignment Tape (VFMS0001H6) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the center position by pressing the CH UP button then the PLAY button on the TVCR.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. **M3**), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

4. Use the X-Value Adj. Screwdriver so that the PB FM signal at J149 [Models CCB130, 190] or TP004 [Model CCB092] (C-PB) is maximum. (**Fig. M6**)
5. Press CH UP button on the TVCR until the CTL waveform has shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.

6. Press CH DOWN button on the TVCR until the CTL waveform has shifted from its original position (not the position achieved in step 5, but the position of CTL waveform in step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.
7. Set the Tracking Control Circuit to the center position by pressing the CH UP button and then the PLAY button on the TVCR.

Checking/Adjustment of Envelope Waveform

Purpose:
To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:
If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to J149 [Models CCB130, 190] or TP004 [Model

CCB092] (C-PB) on the Main CBA. Use J96 [Models CCB130, 190] or TP005 [Model CCB092] (RF-SW) as a trigger.

2. Play back the Gray Scale on the Alignment Tape (VFMS0001H6). Set the Tracking Control Circuit to the center position by pressing the CH UP and then the PLAY button on the TVCR. Adjust the height of Guide Rollers [2] and [3] (**Fig. M3**) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in **Fig. M7**, adjust the height of Guide Roller [2] (Refer to **Fig. M3**) so that the waveform looks like the one shown in **Fig. M9**.
4. If the envelope is as shown in **Fig. M8**, adjust the height of Guide Roller [3] (Refer to **Fig. M3**) so that the waveform looks like the one shown in **Fig. M9**.
4. When Guide Rollers [2] and [3] (Refer to **Fig. M3**) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in **Fig. M9**.

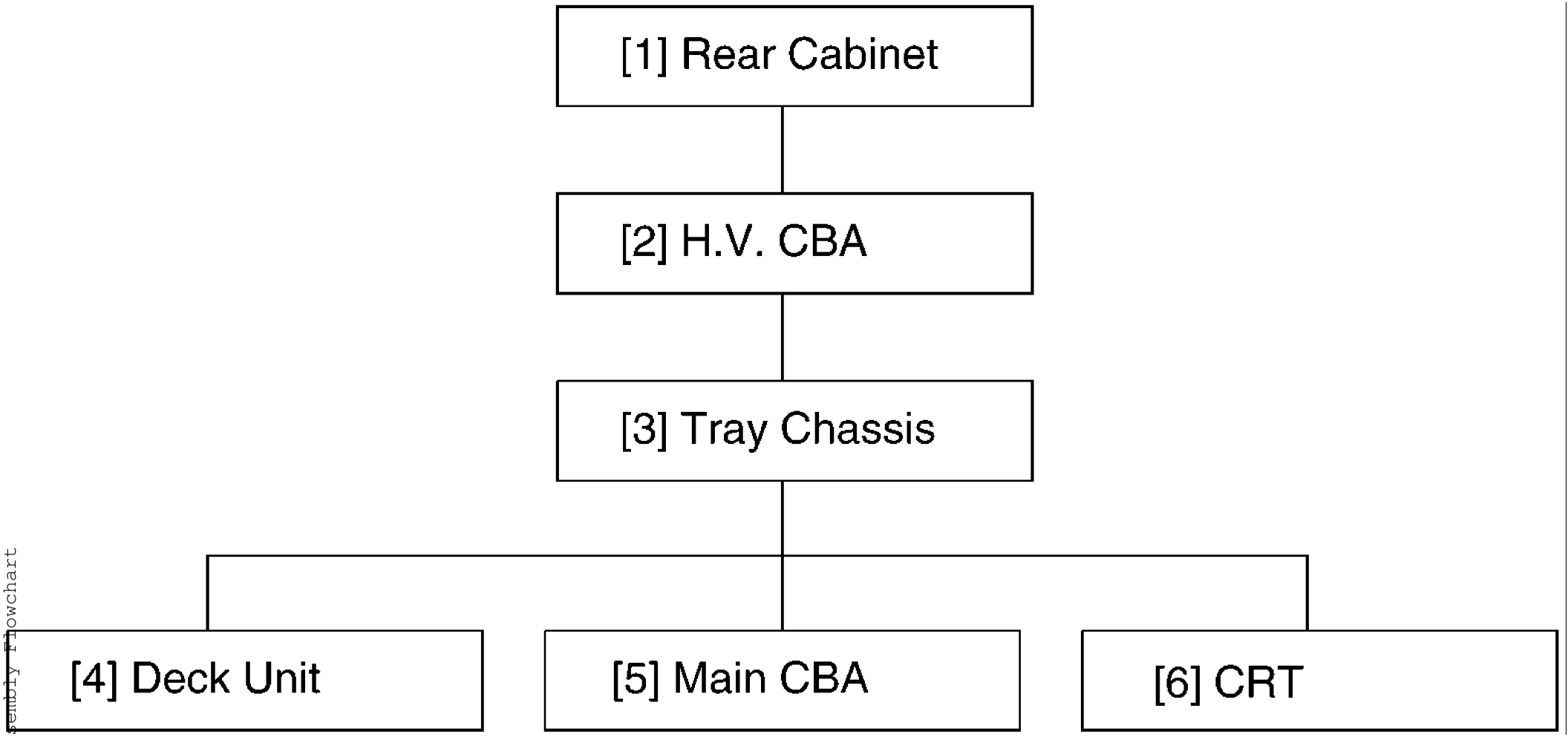
Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to **Fig. M3**), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

Azimuth Alignment of Audio/Control/Erase Head

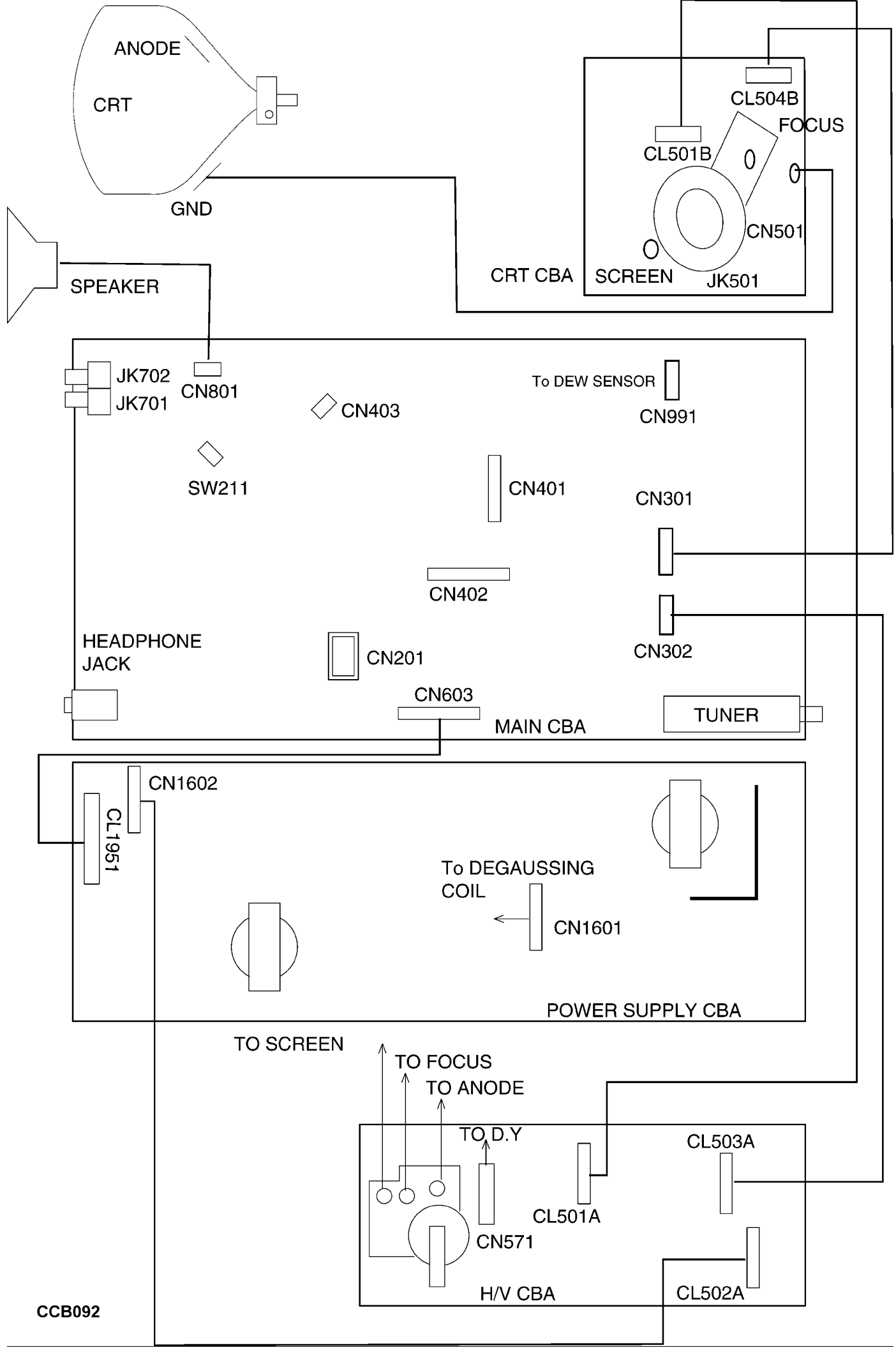
Purpose:
To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:
If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (VFMS0001H6) and confirm that the audio signal output level is 6 kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (**Fig. M6**)



Click here for Disassembly Flowchart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To DEW SENSOR
CN991
SW211
CN401
CN301
CN402
HEADPHONE
JACK
CN201
CN302
CN603
MAIN CBA
TUNER
CN1602
CL1951
To DEGAUSSING
COIL
CN1601
POWER SUPPLY CBA
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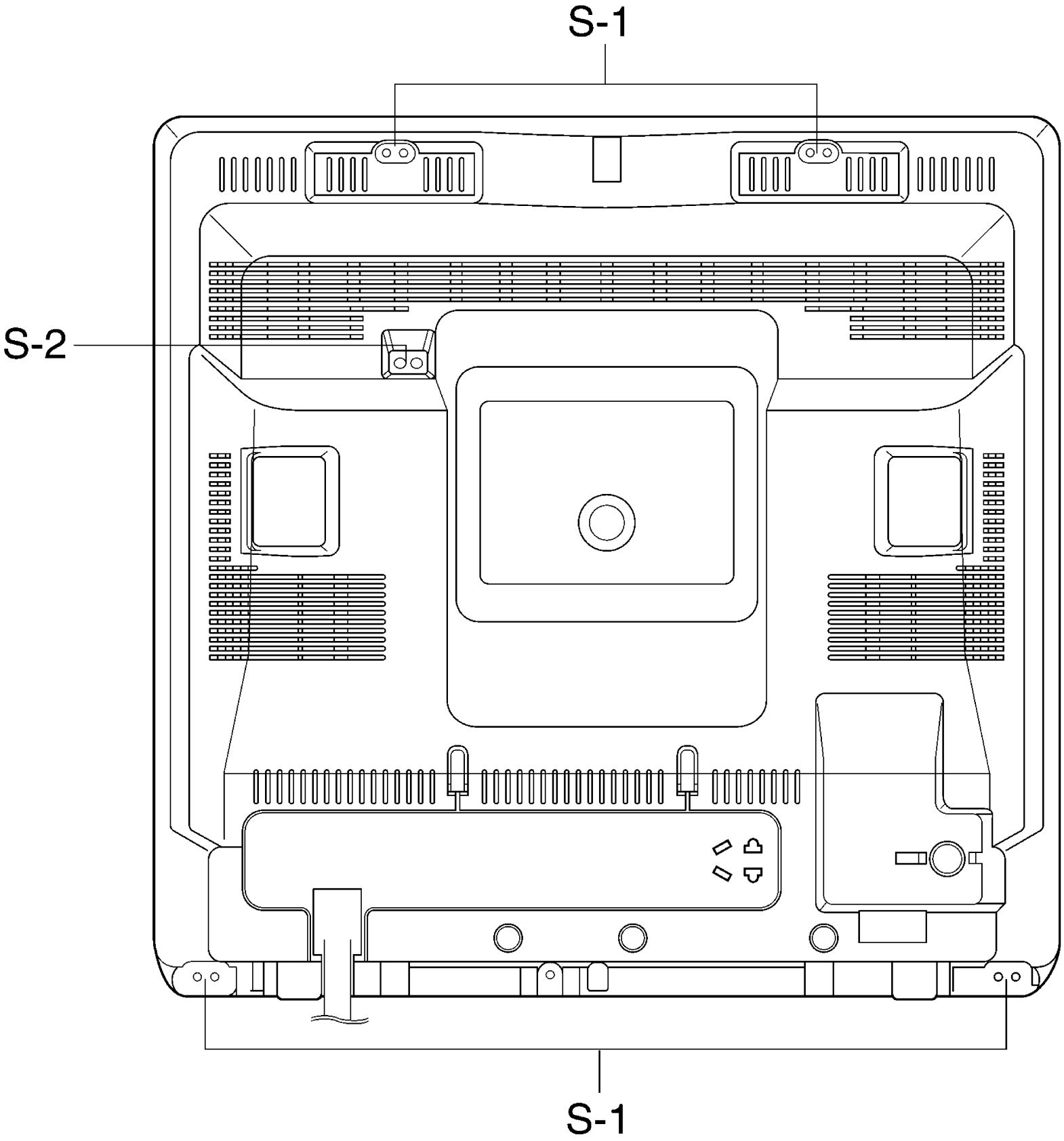
CCB092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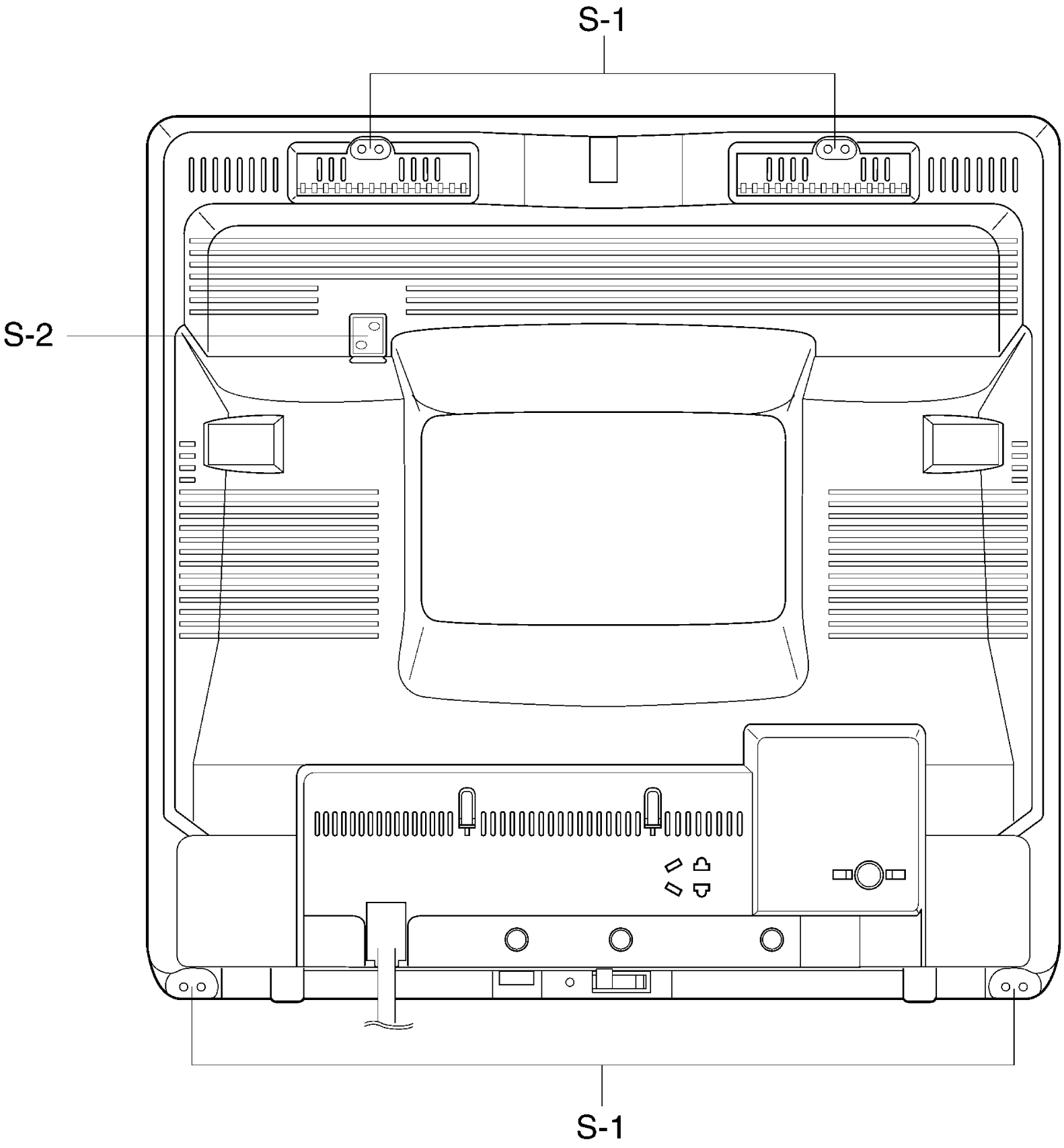
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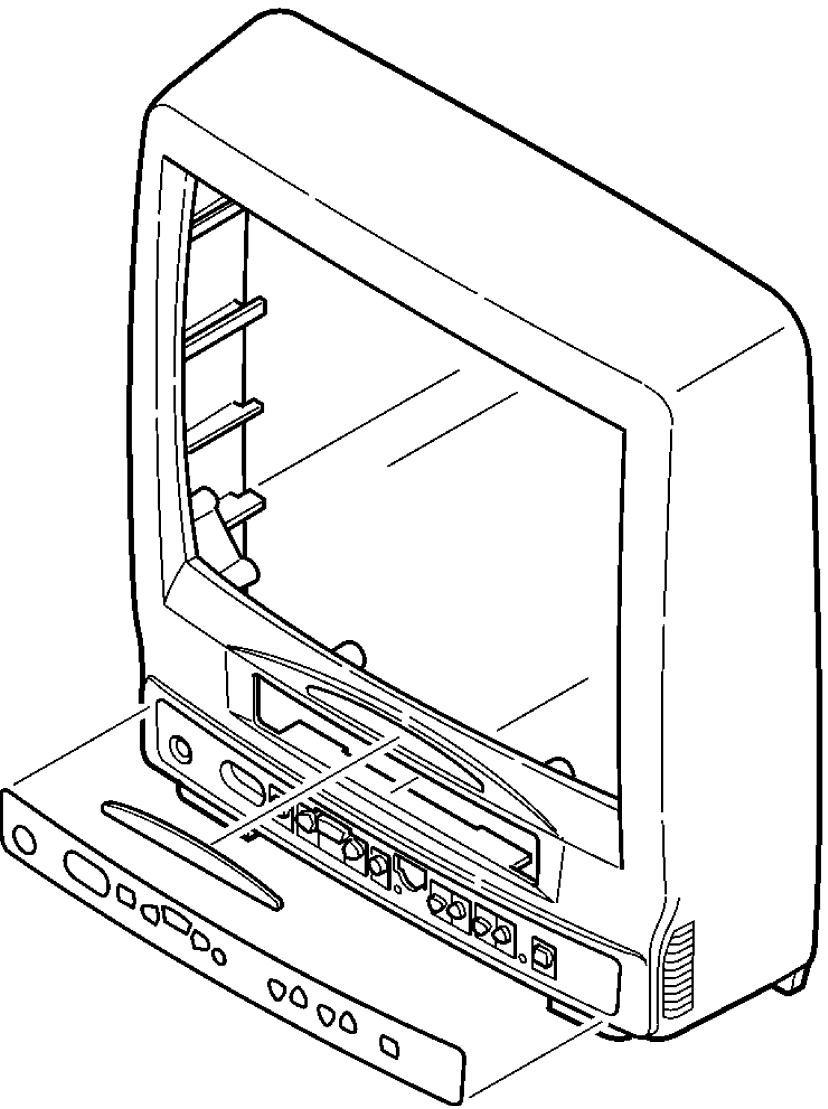
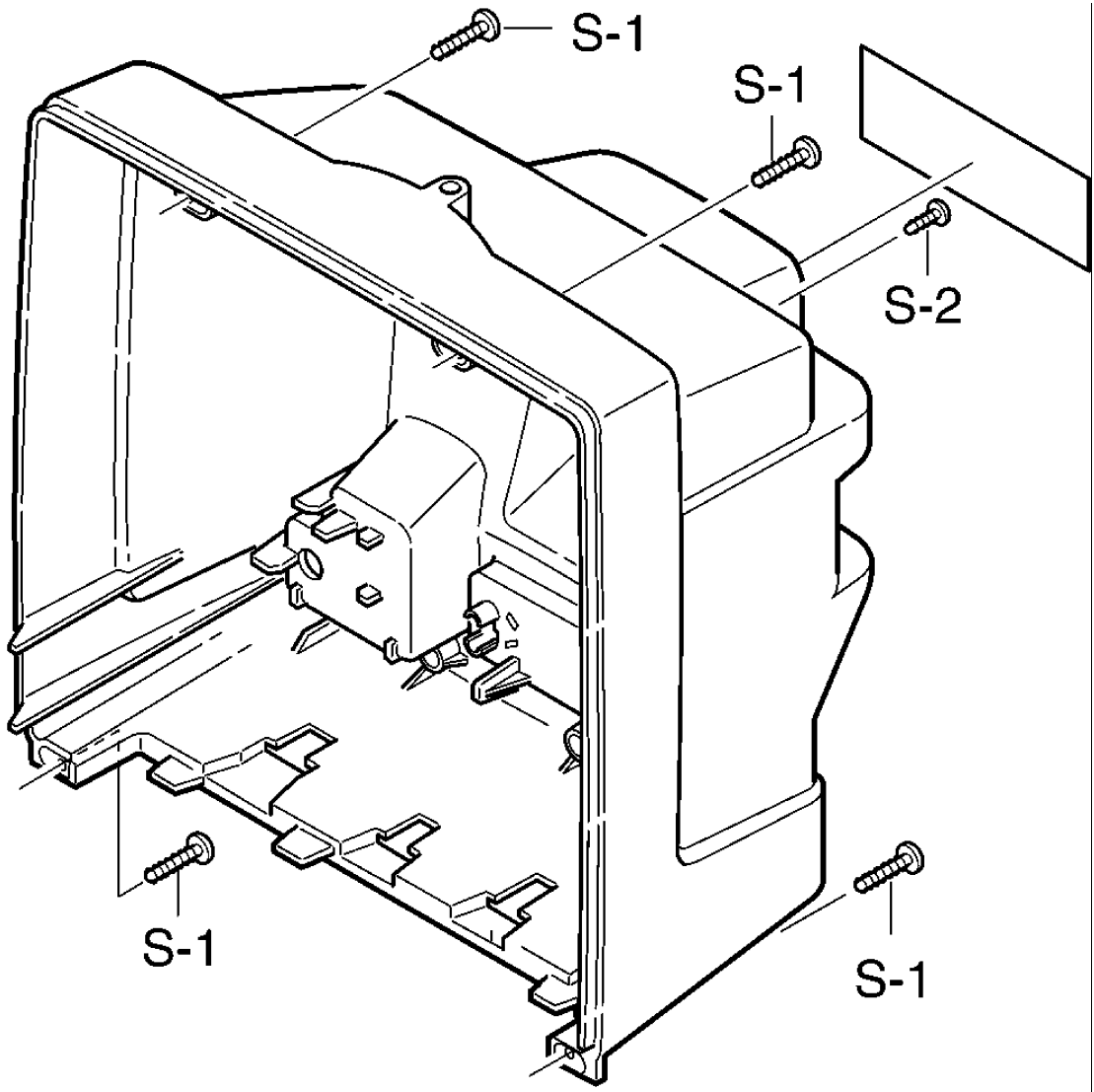
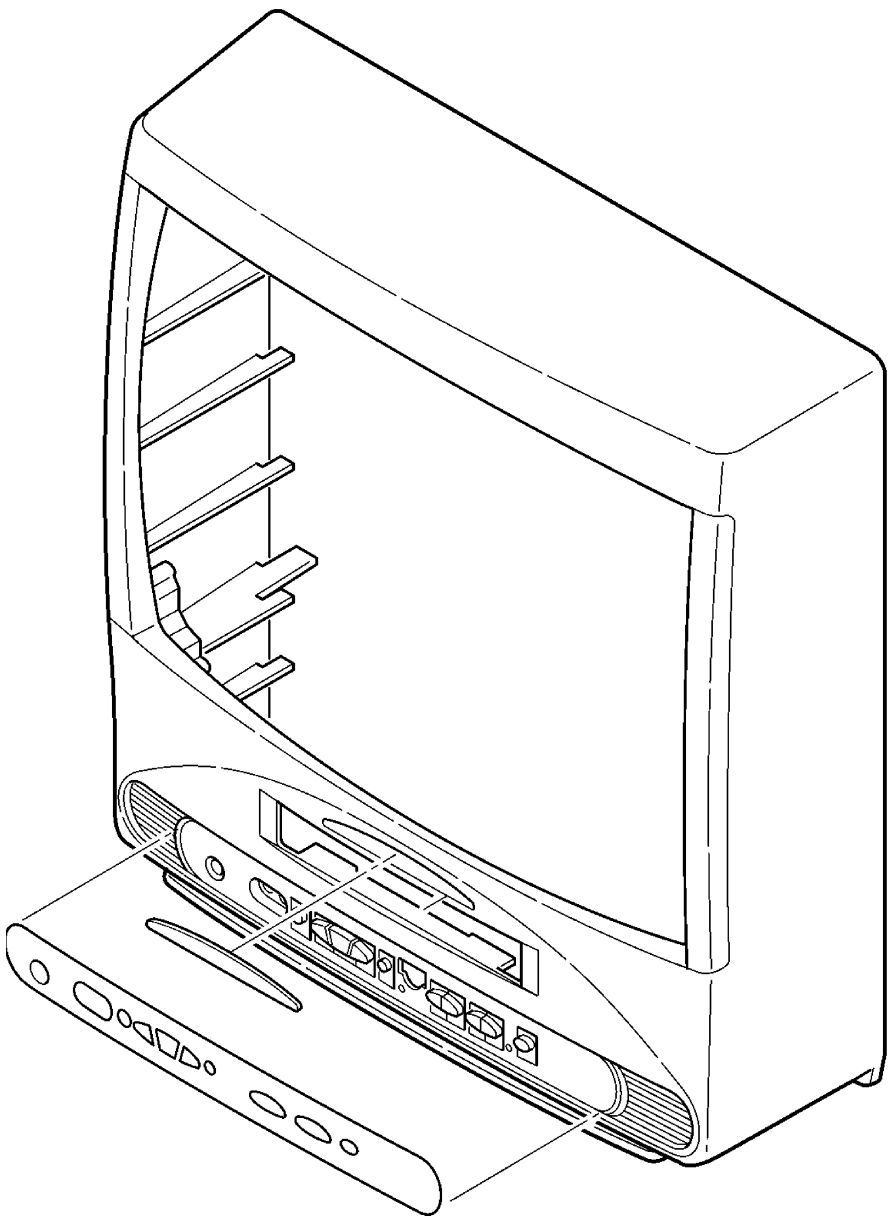
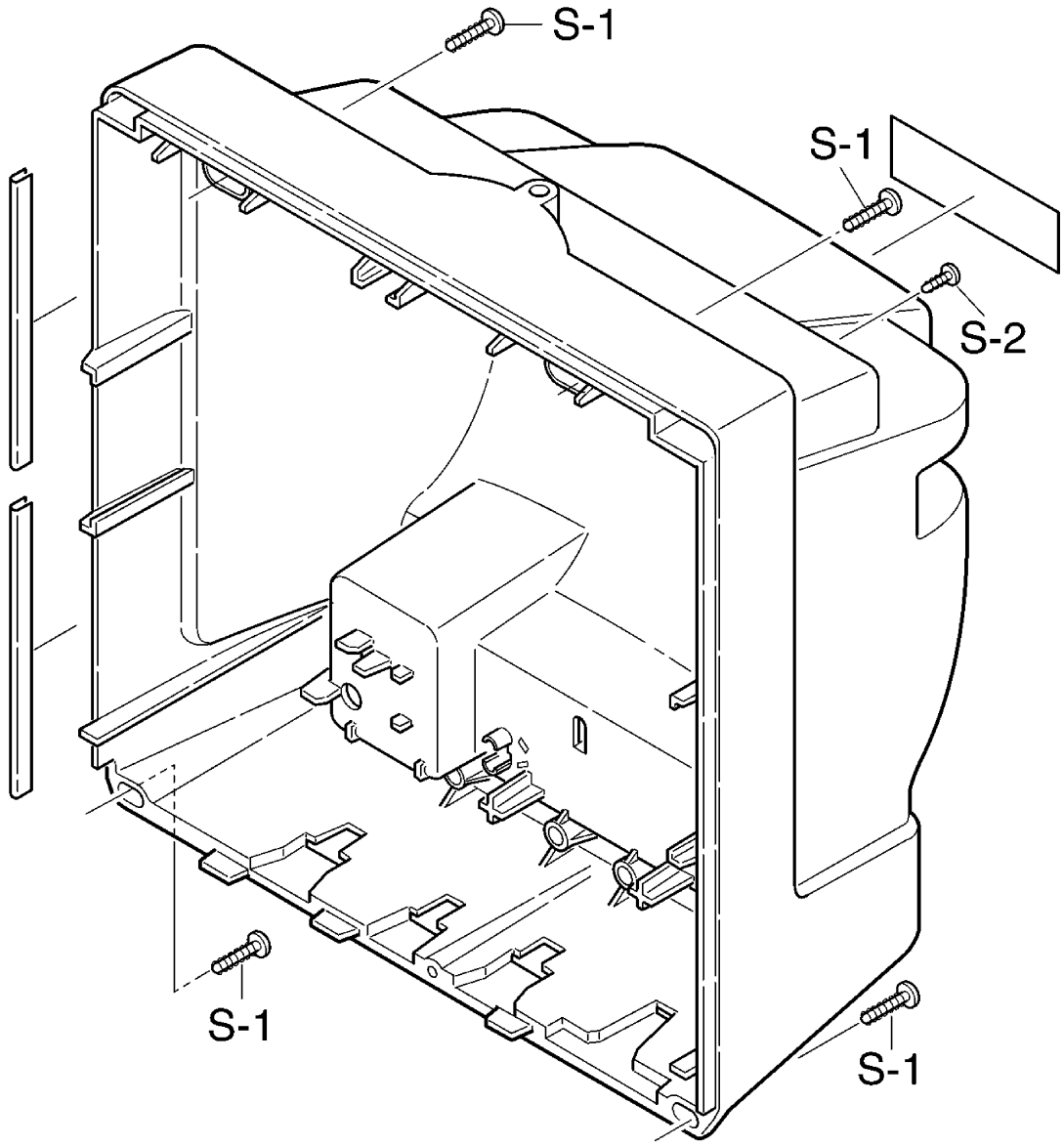




[1] Rear Cabinet





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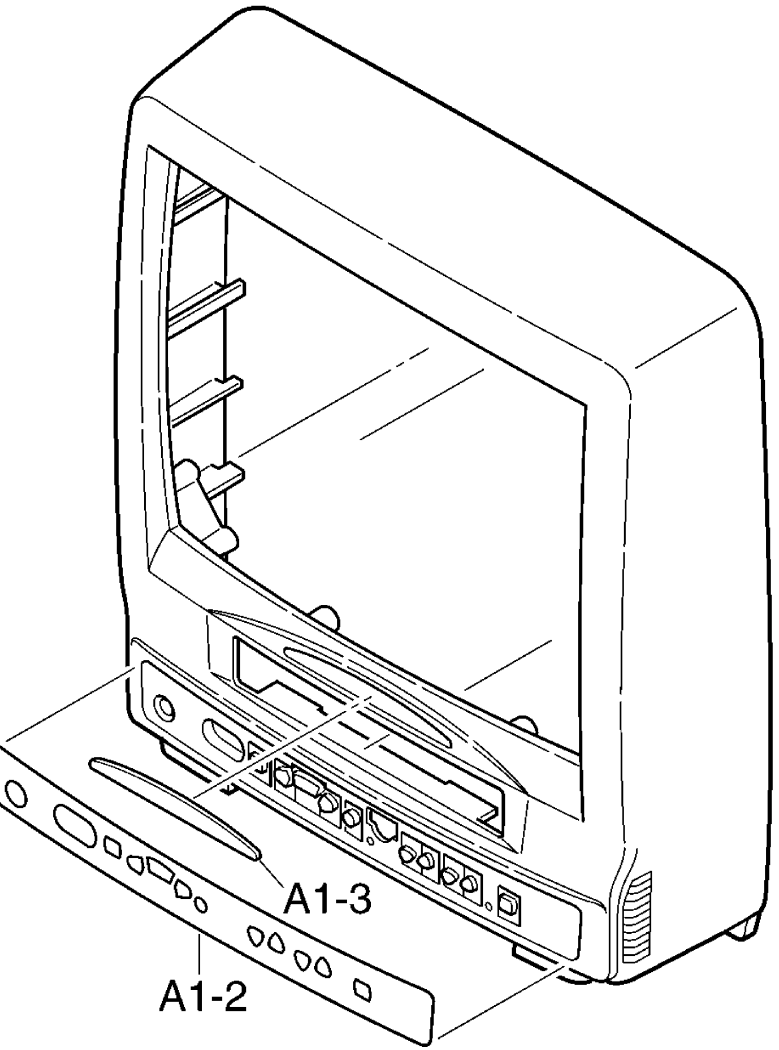
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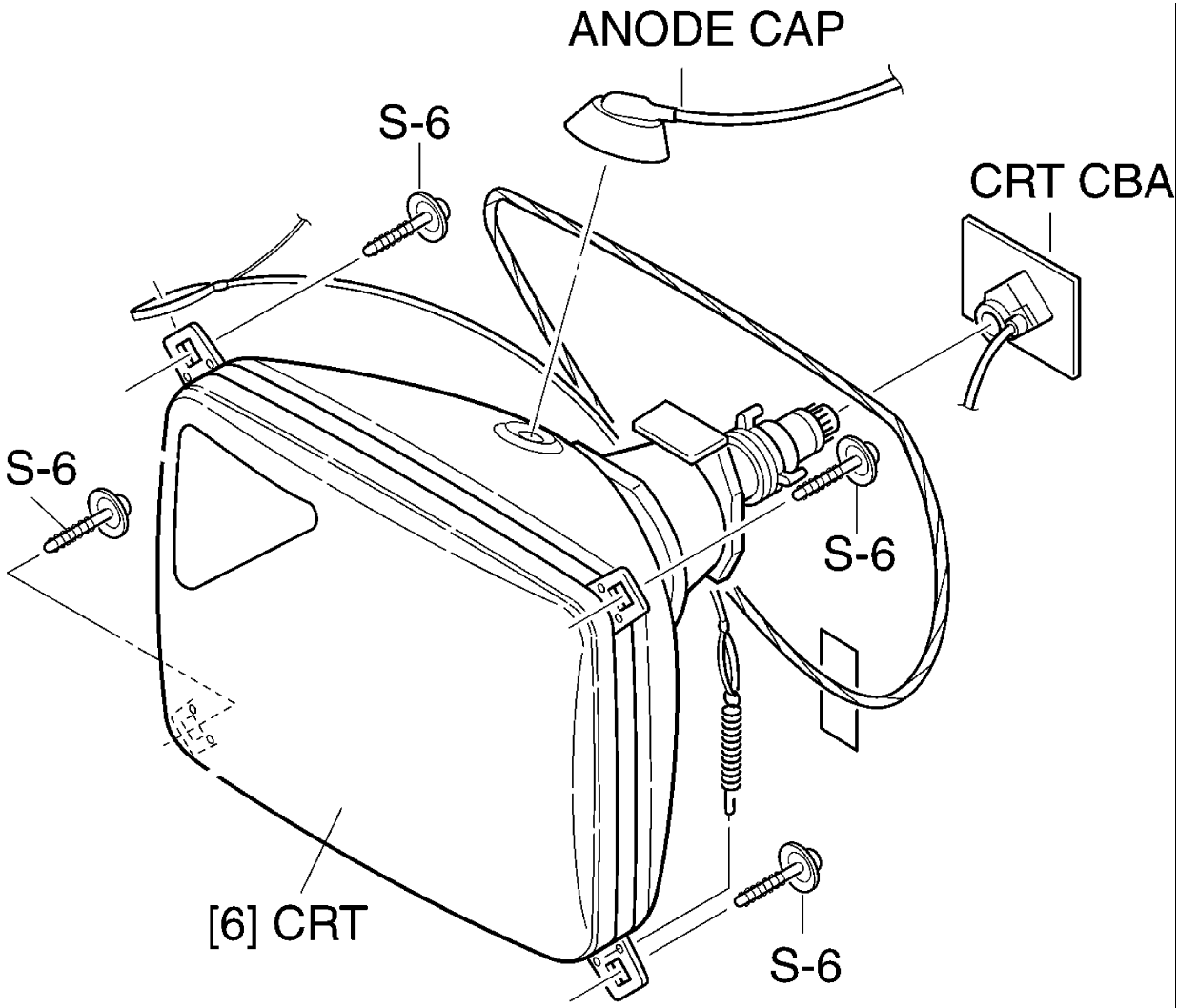
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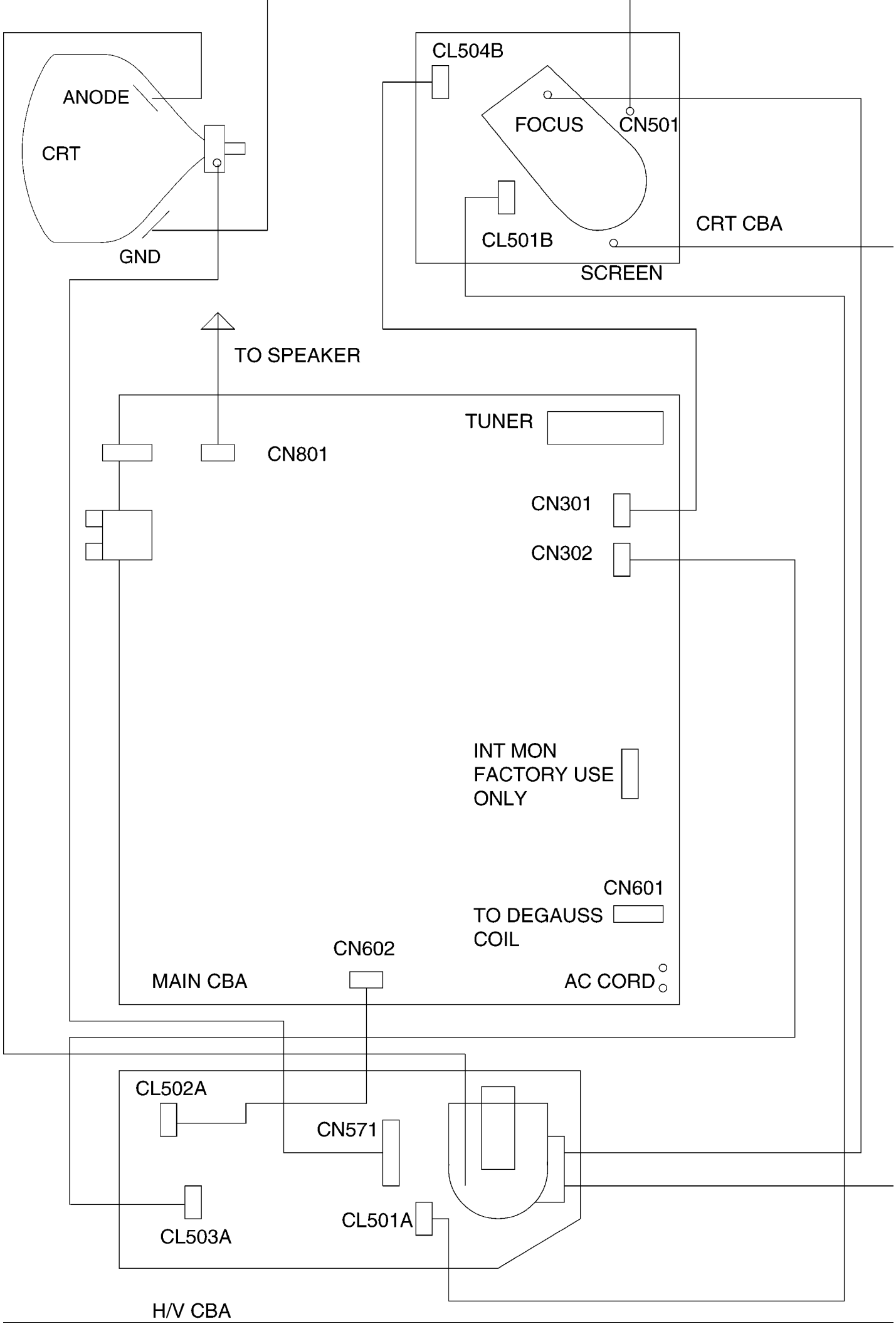
CRT CBA
S-6
S-6
[6] CRT
S-6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CN302
INT MON
FACTORY USE
ONLY
CN601
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AC CORD
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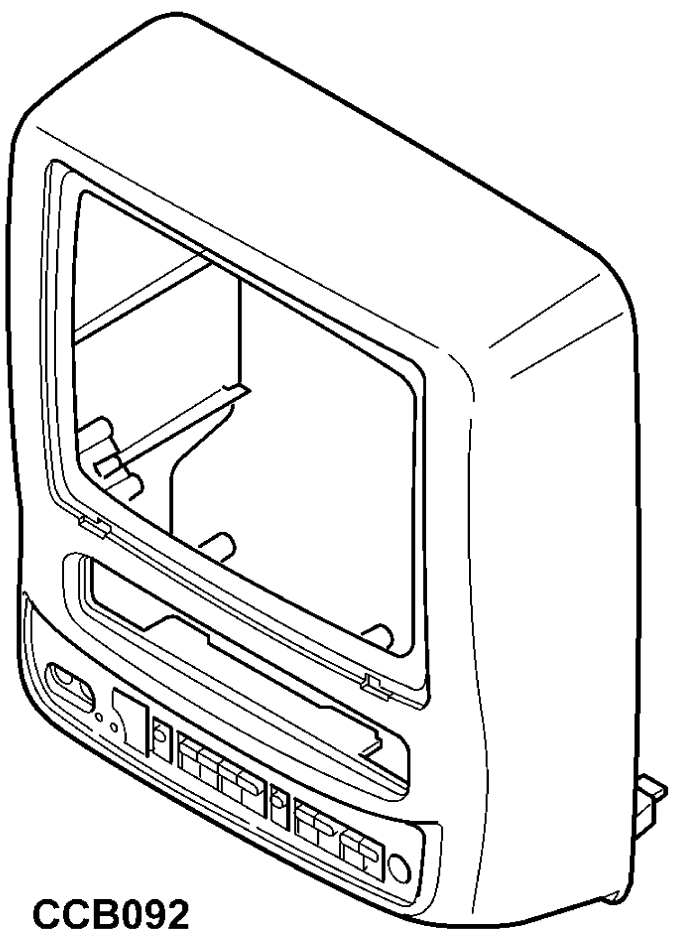
CN571
CL503A
CL501A
H/V CBA

[1] REAR CABINET



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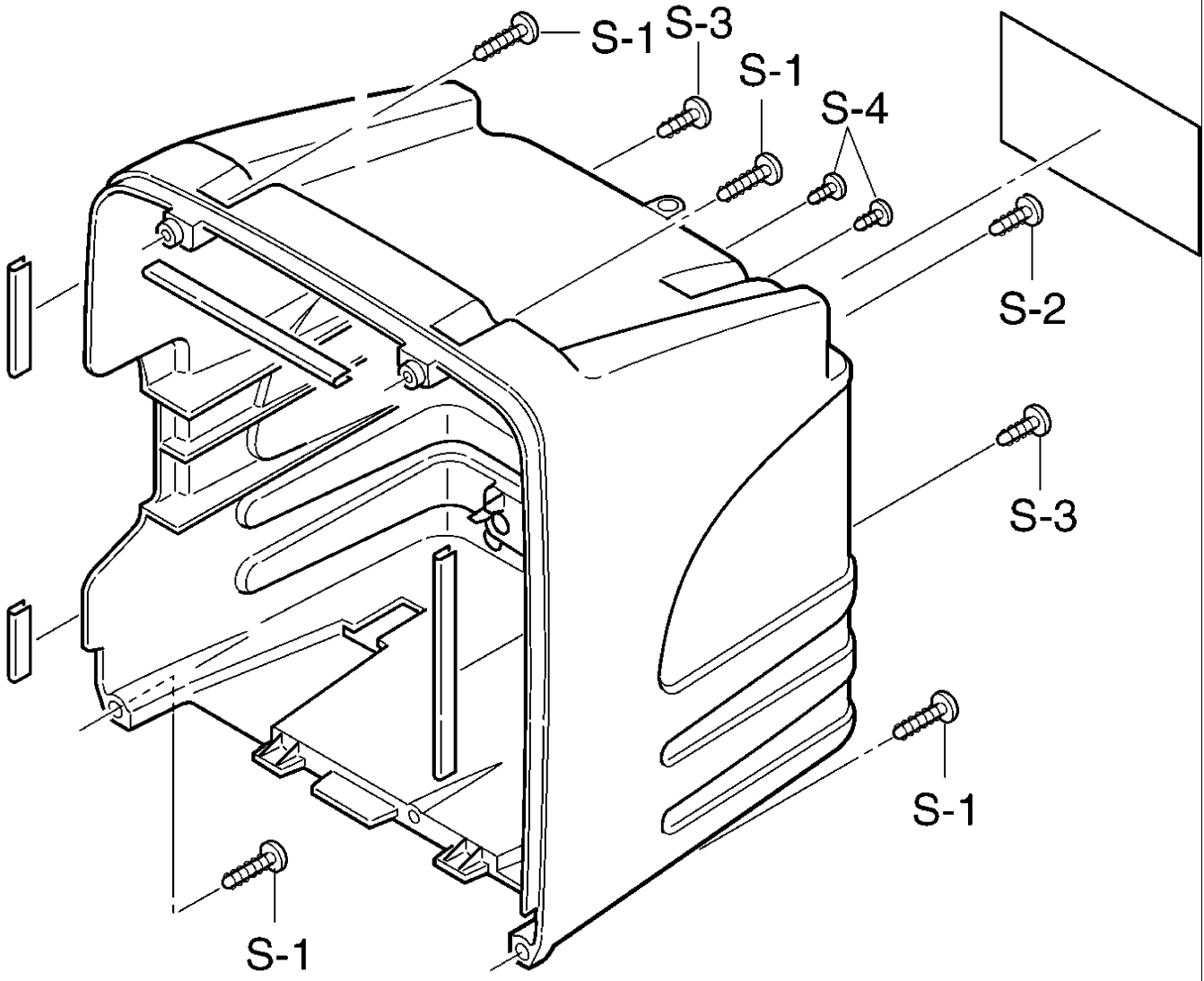

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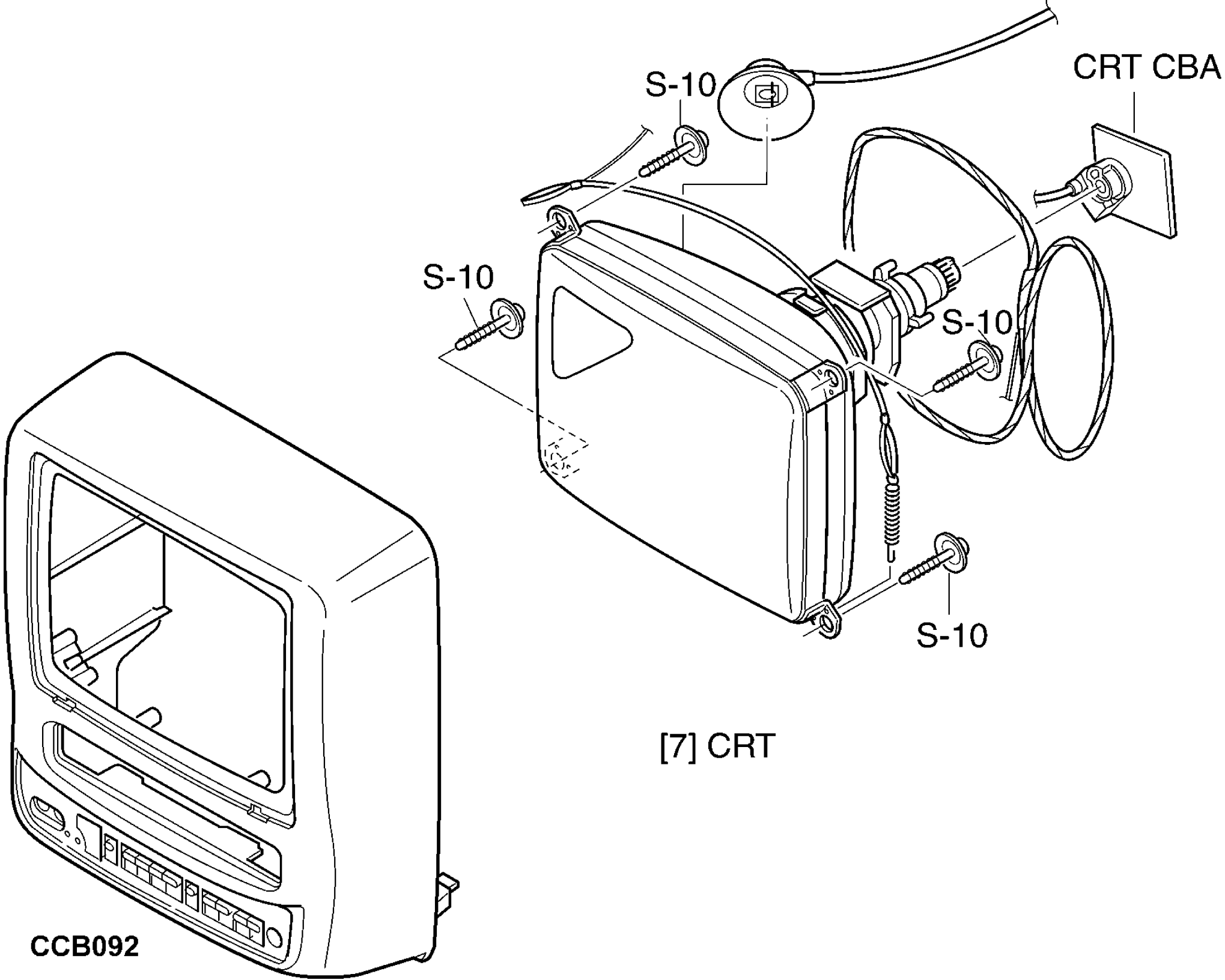

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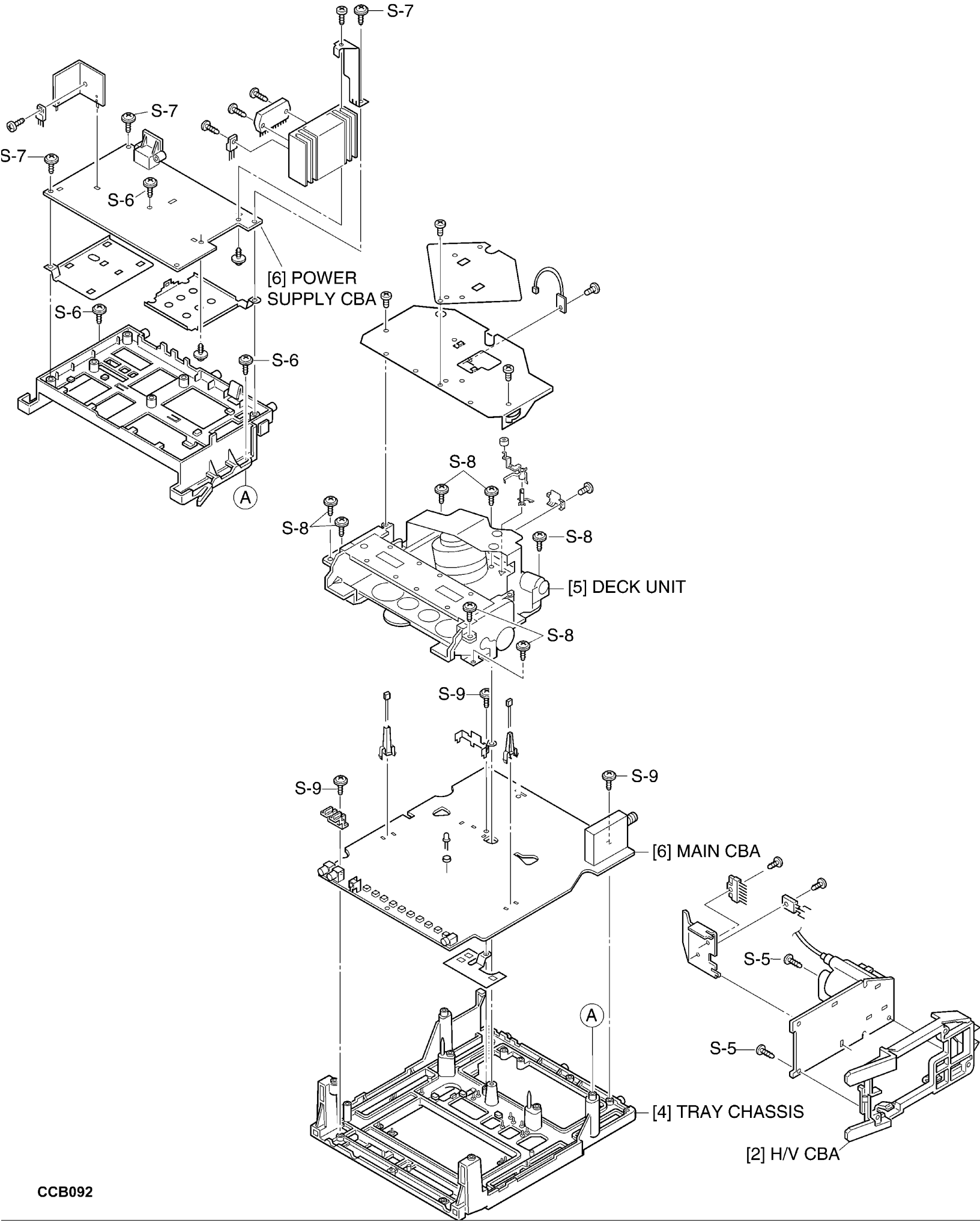
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S-8
S-9
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S-5
S-5
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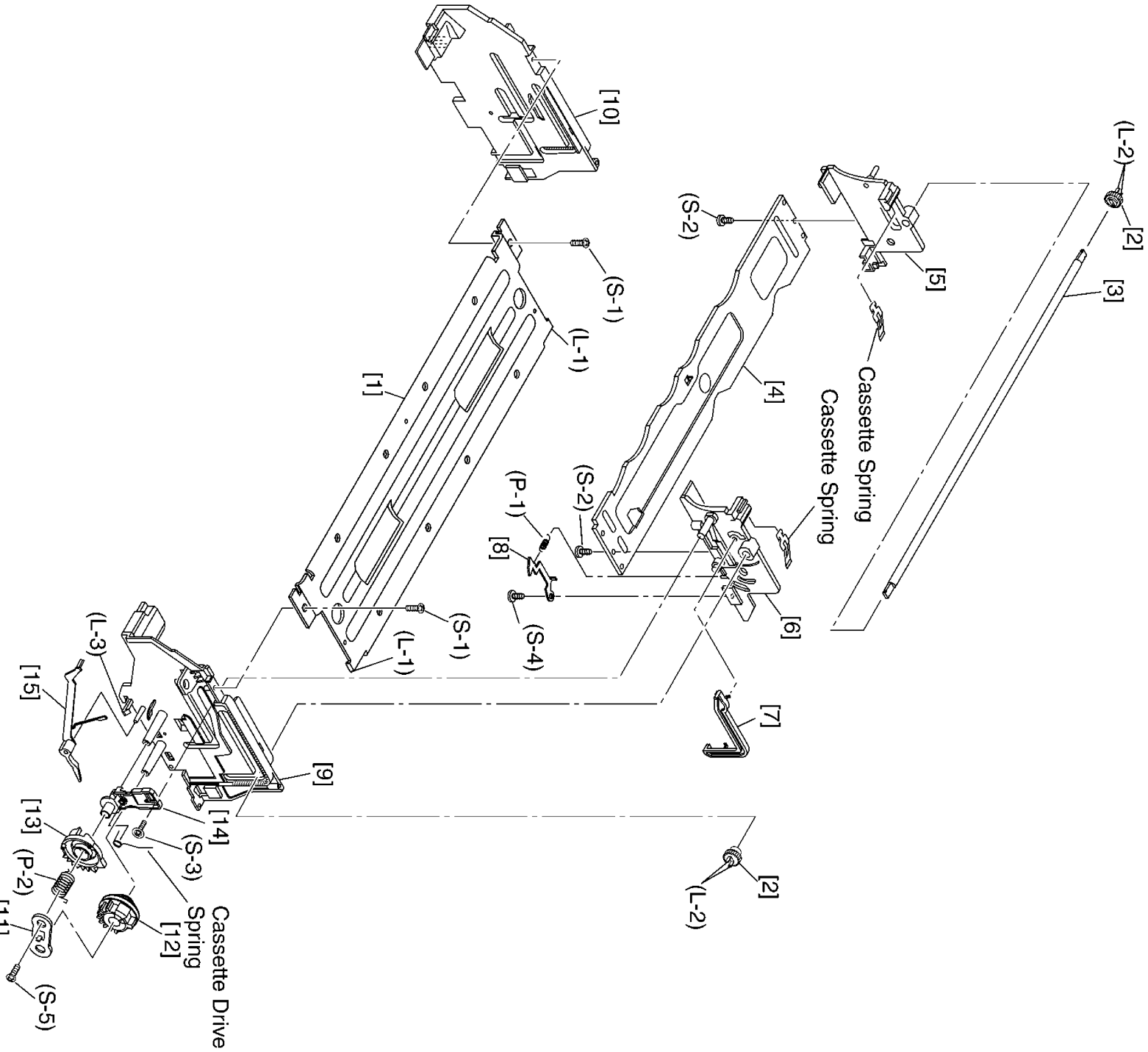
[2] H/V CBA

CCB092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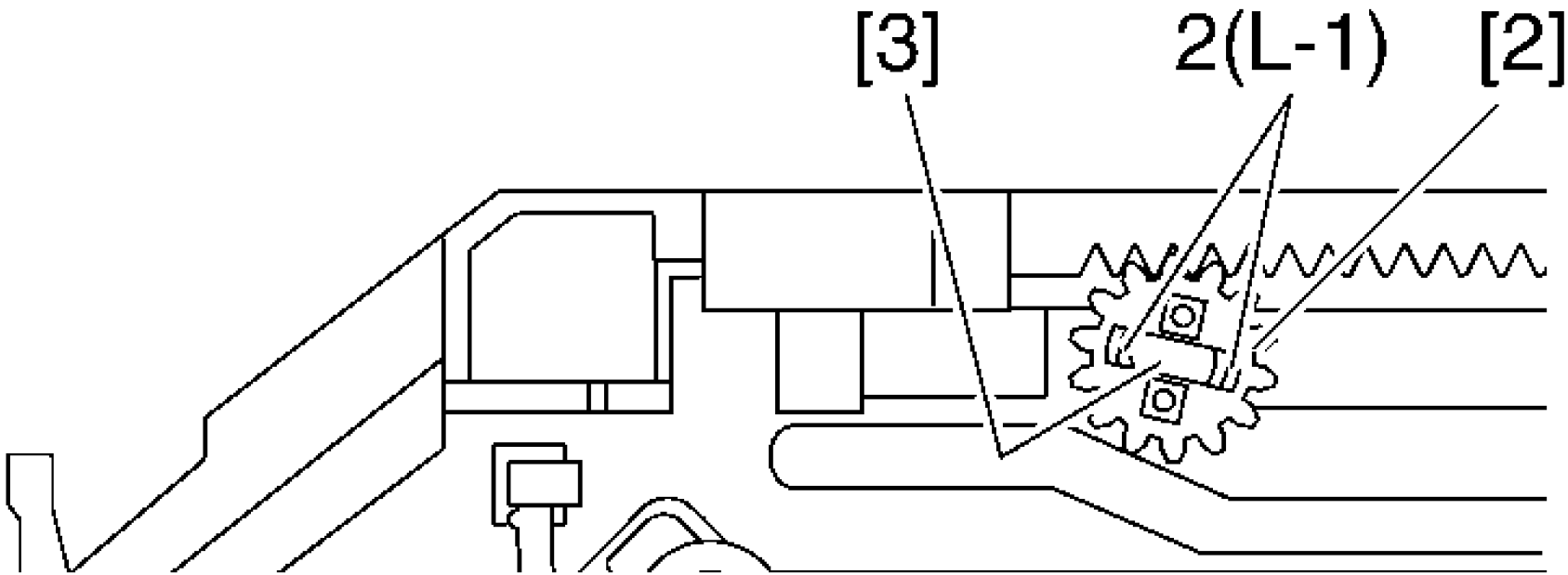
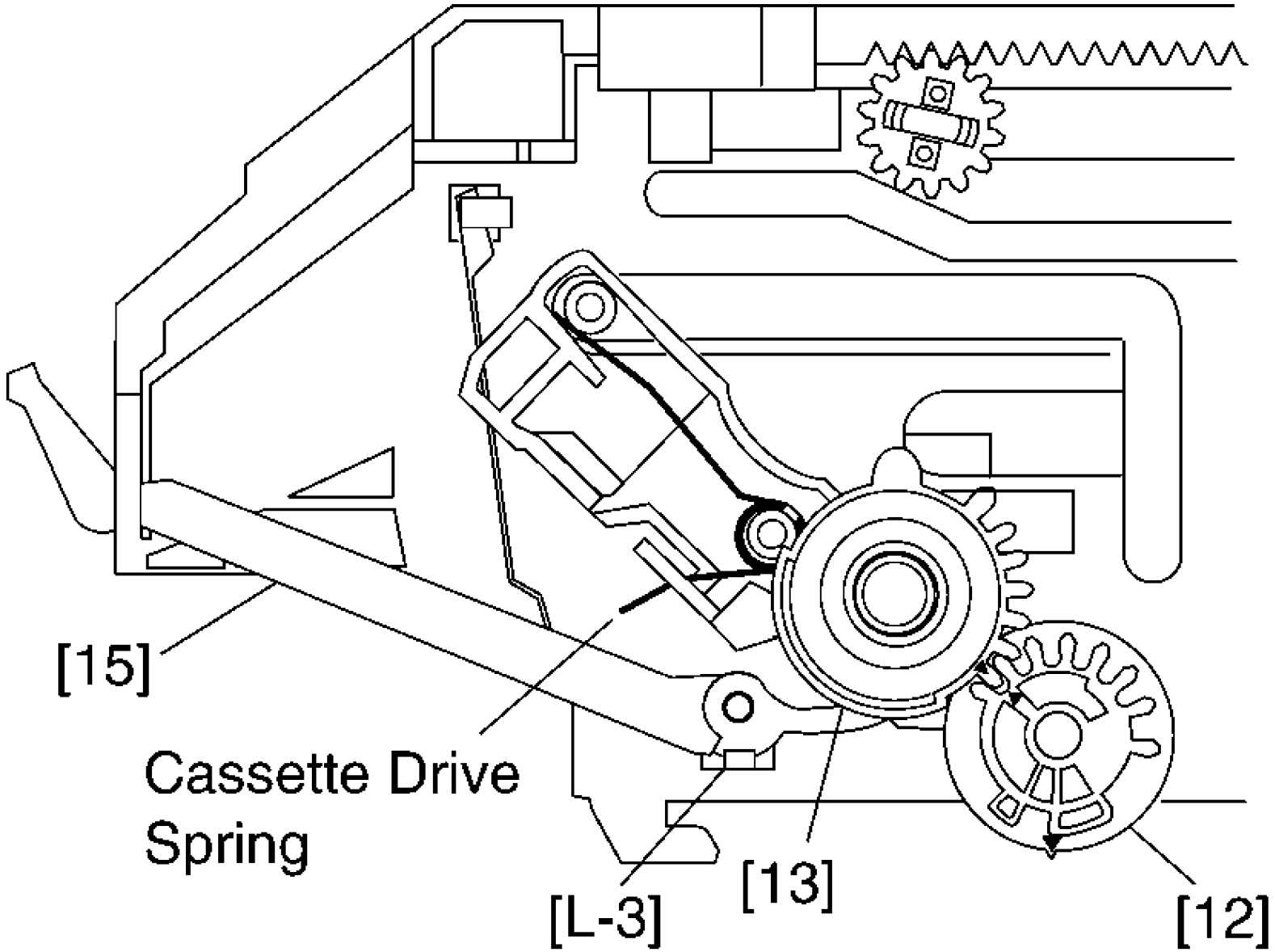
[1]
(S-2)
[4]
[5]
(L-2)
[2]
[3]
Cassette Spring
Cassette Spring
(P-1)
[8]
(S-2)
(S-4)
[6]
[7]
(L-3)
[15]
(S-1)
(L-1)
[9]
[14]
(S-3)
[13]
(P-2)
[11]
(S-5)
Cassette Drive Spring
[12]
[2]
(L-2)

View before disassembling [2] and [3] (Installation of Slider Shaft and Slider Gear)



Install [2] and [3] in Eject position.
(When disassembling, [2] and [3] can be removed either in Eject position or Cassette-in position.)

- This figure shows where [2], [3] and other parts are in Eject position.



When reassembling [12] and [13],
refer to the Alignment Section, Pg. 2-4-11.

- This figure shows where [12], [13], [15] and other parts are in Eject position.

DM18

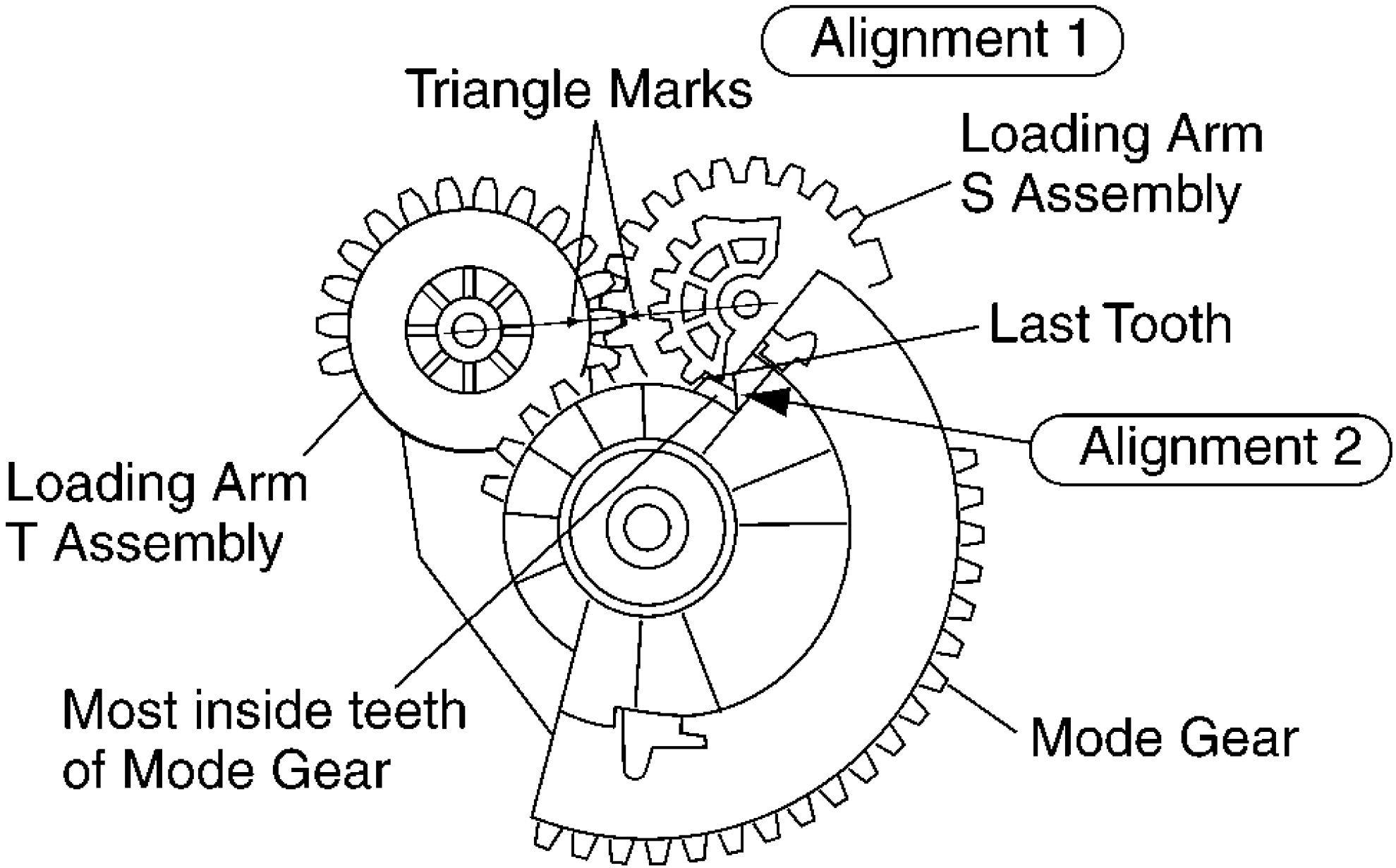


Fig. AL2 - Fig. AL2.

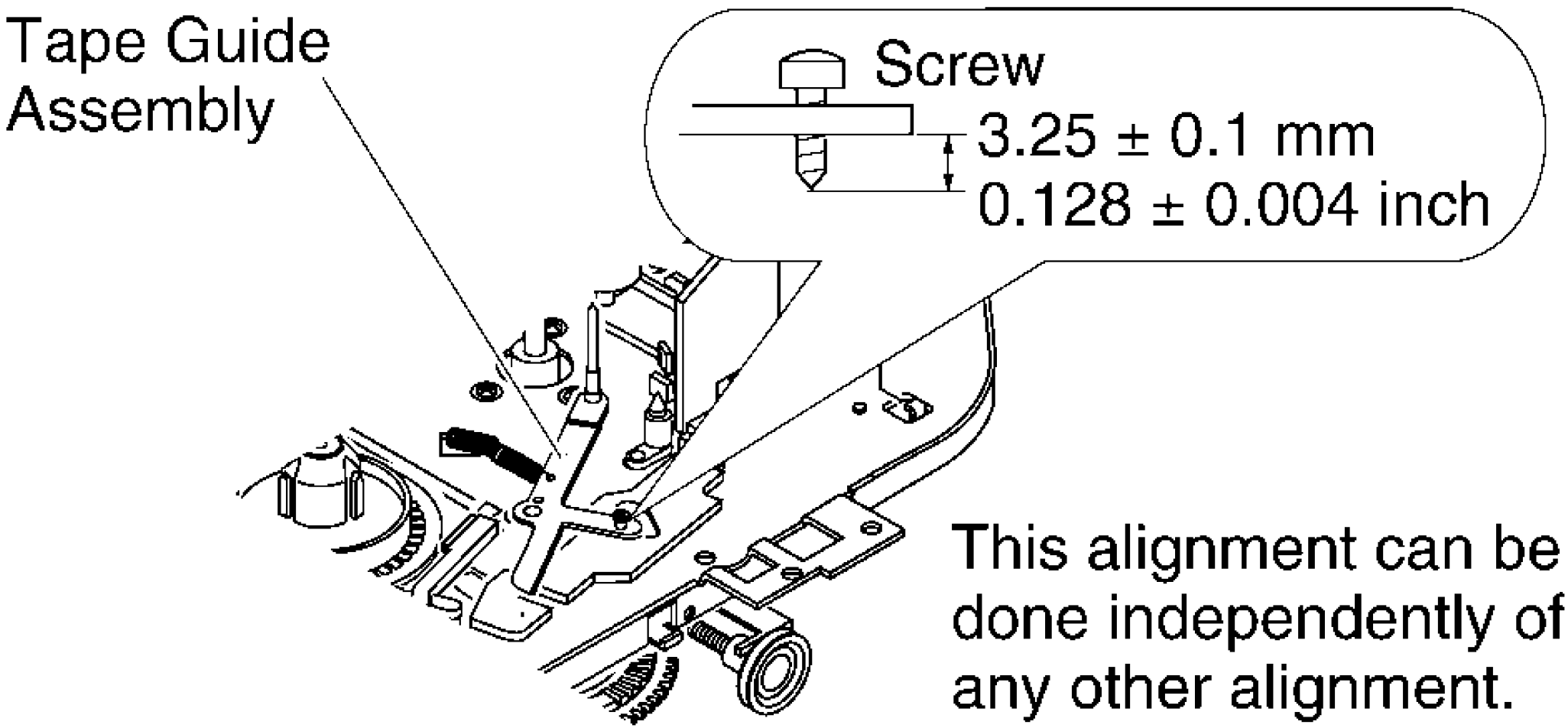

Tape Guide
Assembly
Screw
3.25 ± 0.1 mm
0.128 ± 0.004 inch
This alignment can be
done independently of
any other alignment.

Fig. AL3

Fig. AL4

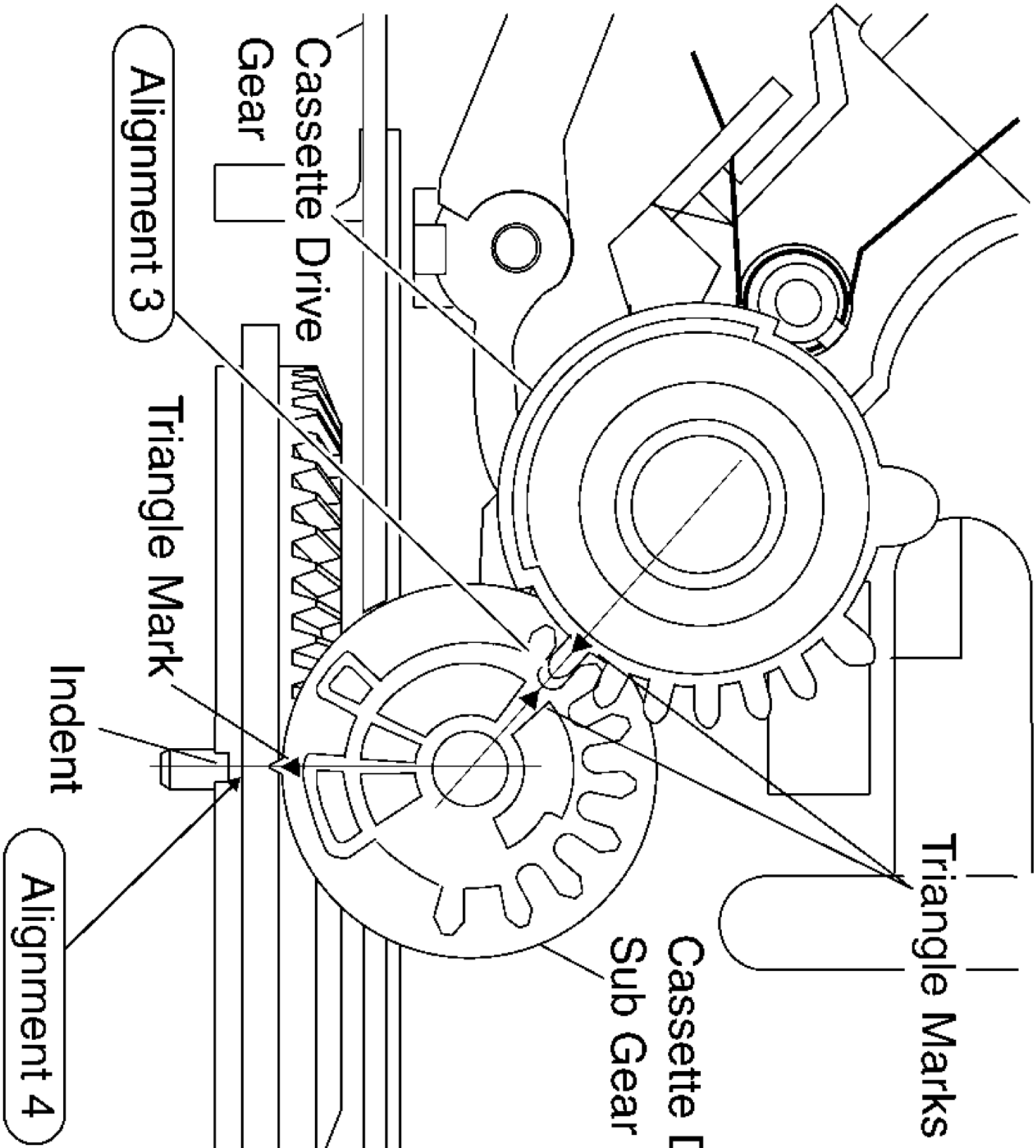
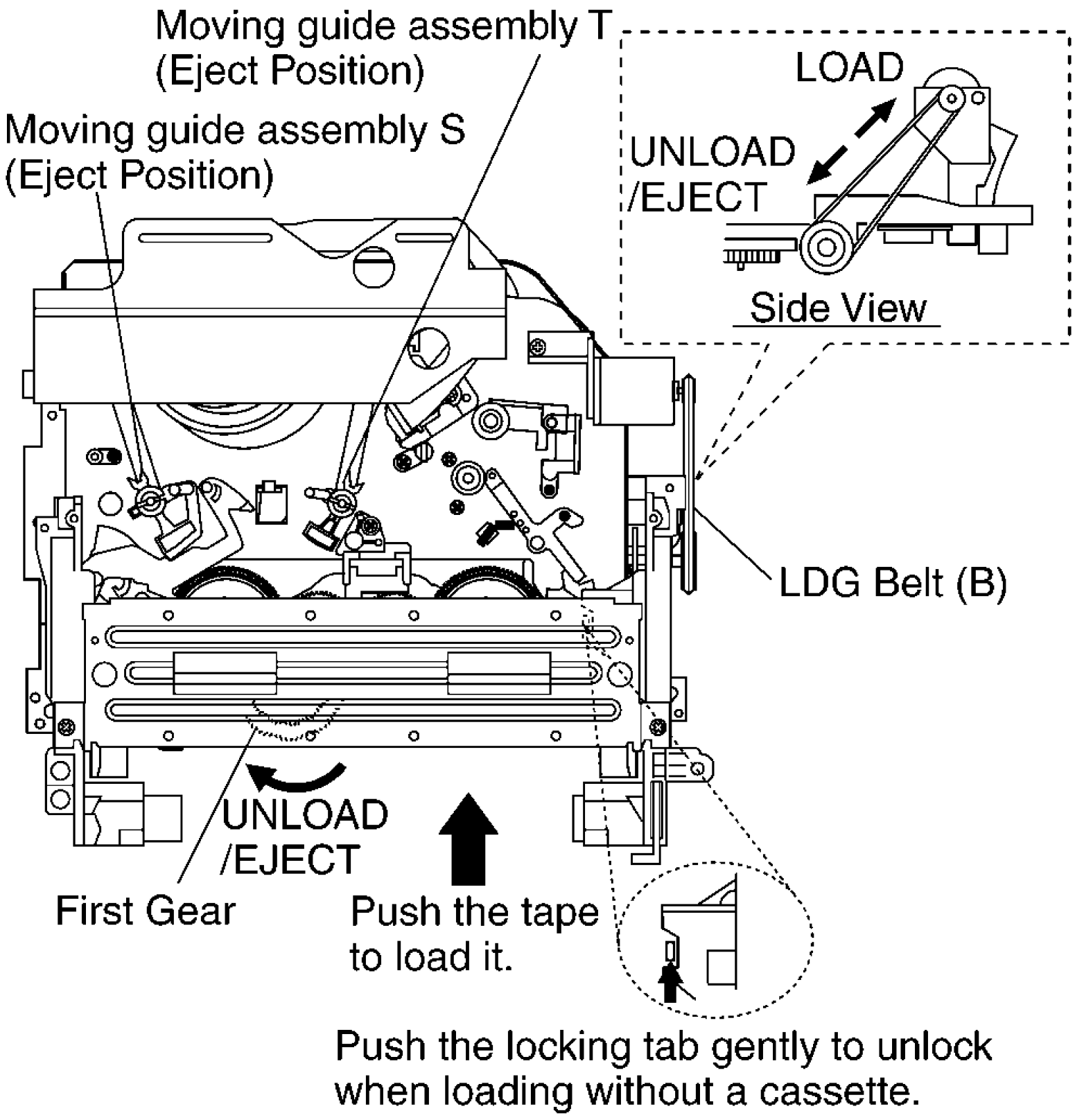
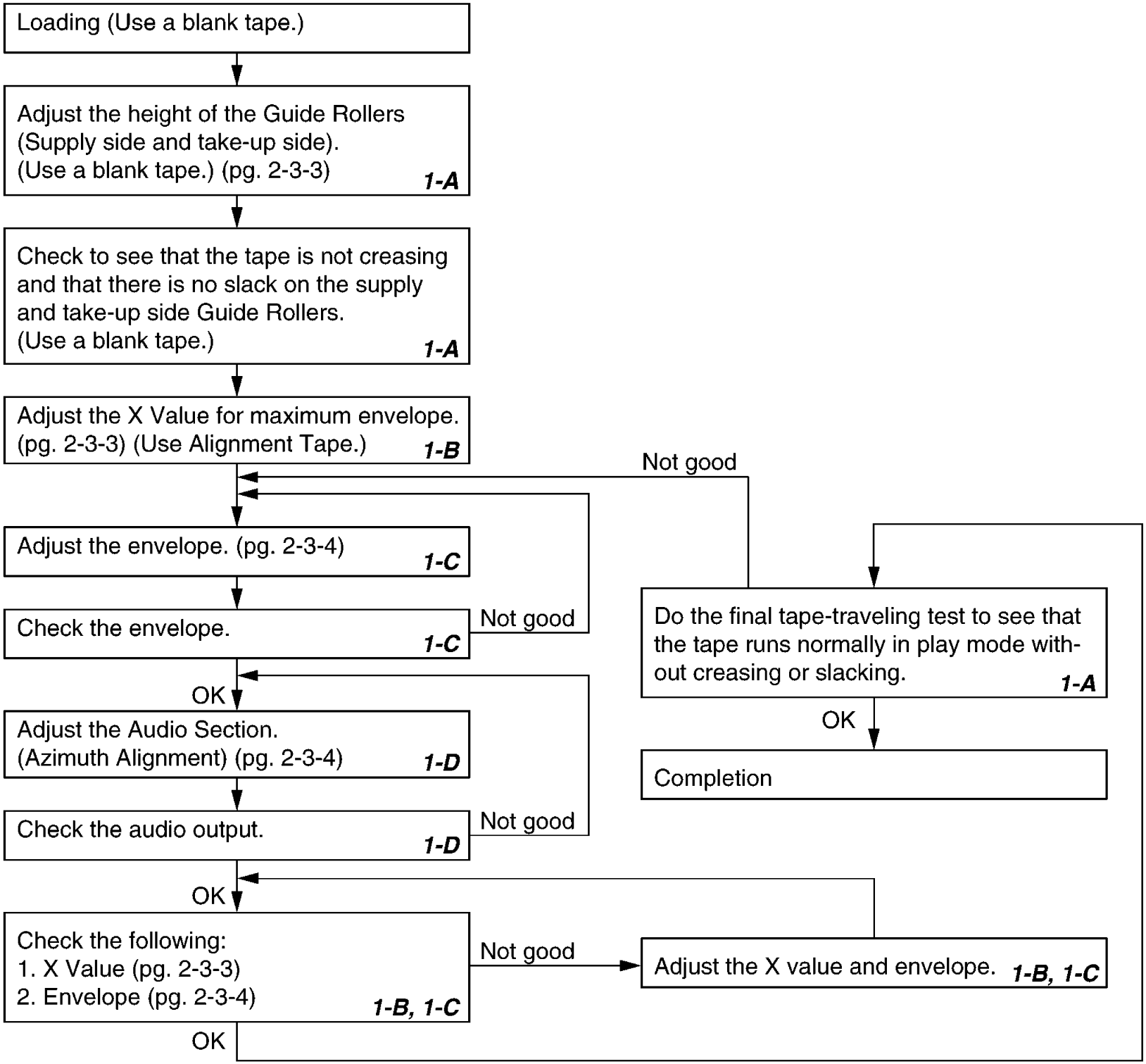

Triangle Marks
Cassette Drive Sub Gear
Cassette Drive Gear
Alignment 3
Triangle Mark
Indent
Alignment 4

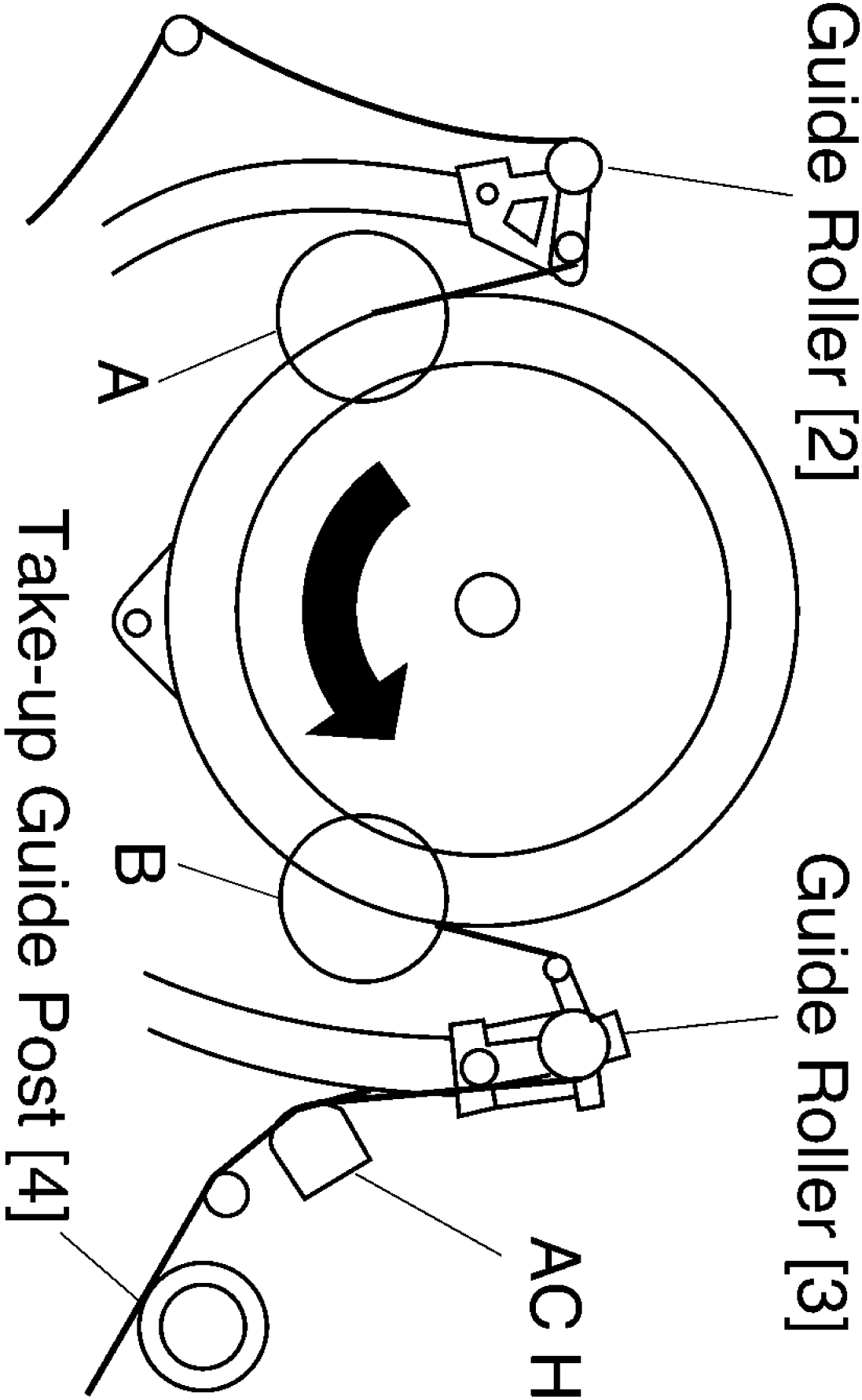
Fig. M1

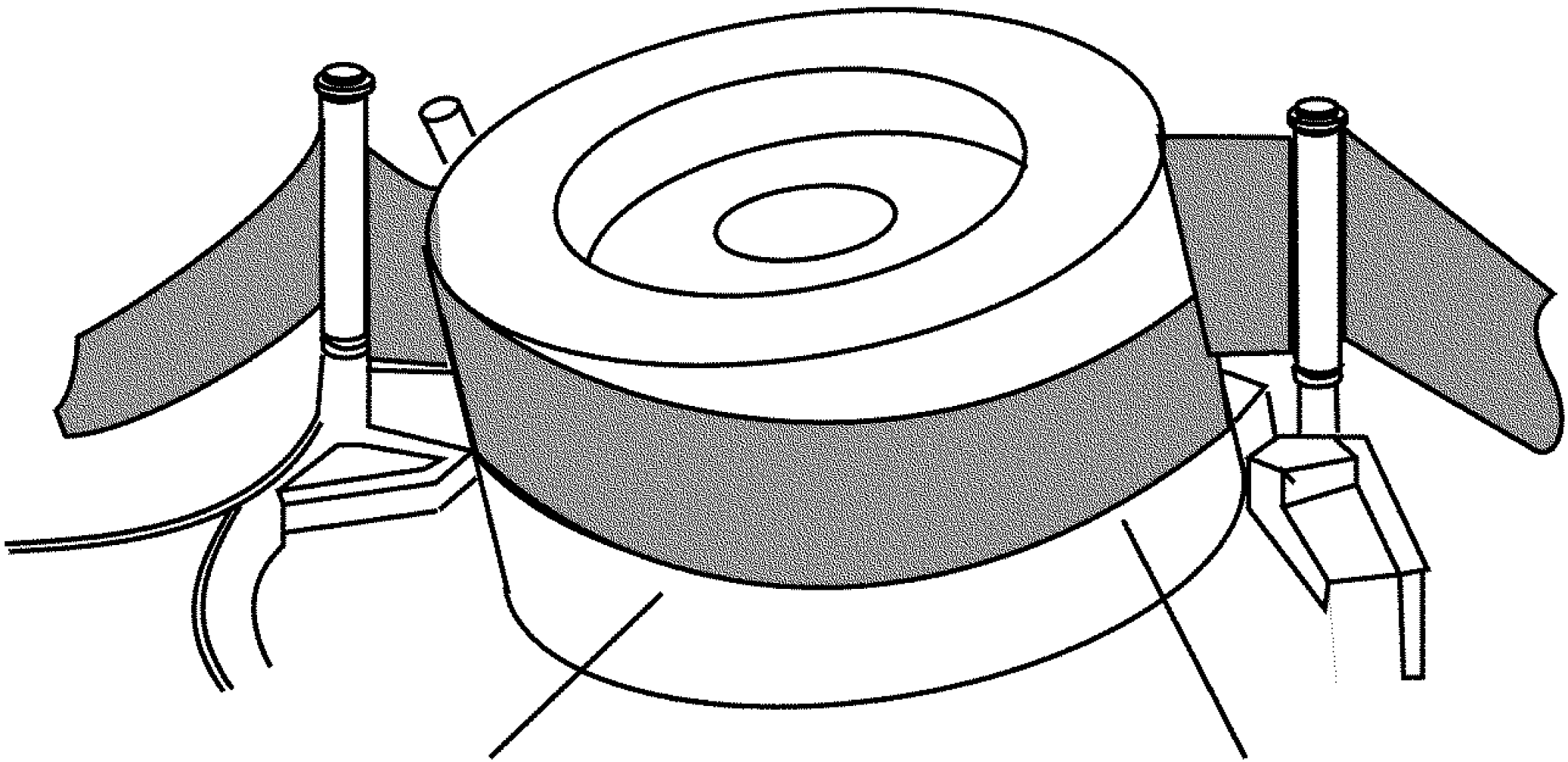

Moving guide assembly T
(Eject Position)
Moving guide assembly S
(Eject Position)
LOAD
UNLOAD
/EJECT
Side View
LDG Belt (B)
UNLOAD
/EJECT
First Gear
Push the tape
to load it.
Push the locking tab gently to unlock
when loading without a cassette.

Click here for Flowchart of Alignment for tape traveling

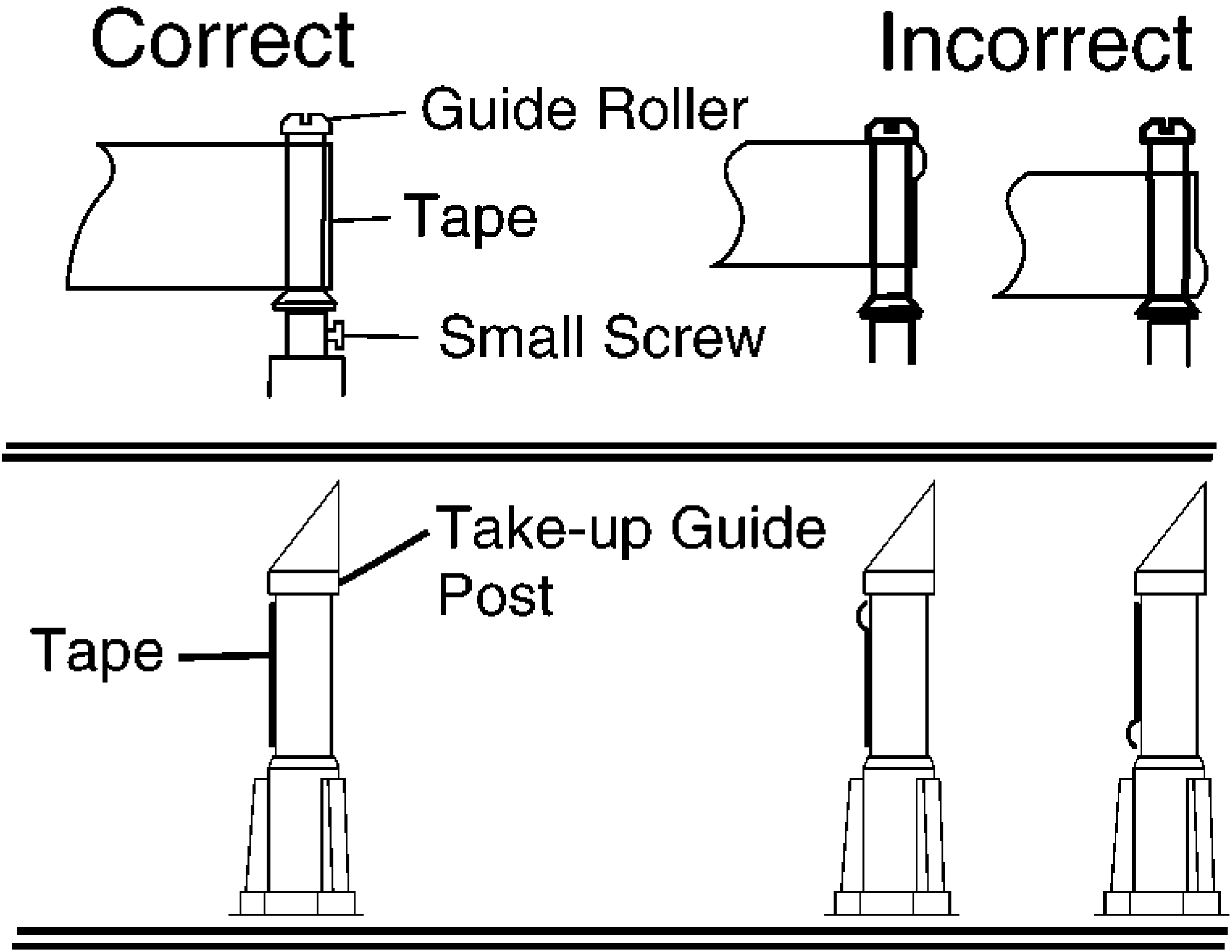
Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (pg. 2-3-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (pg. 2-3-3) (Use Alignment Tape.) 1-B
Not good
Adjust the envelope. (pg. 2-3-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (pg. 2-3-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following:
1. X Value (pg. 2-3-3)
2. Envelope (pg. 2-3-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion


Guide Roller [2]
A
B
Take-up Guide Post [4]
Guide Roller [3]
AC Head



M4


Correct
Incorrect
Guide Roller
Tape
Small Screw
Take-up Guide Post
Tape

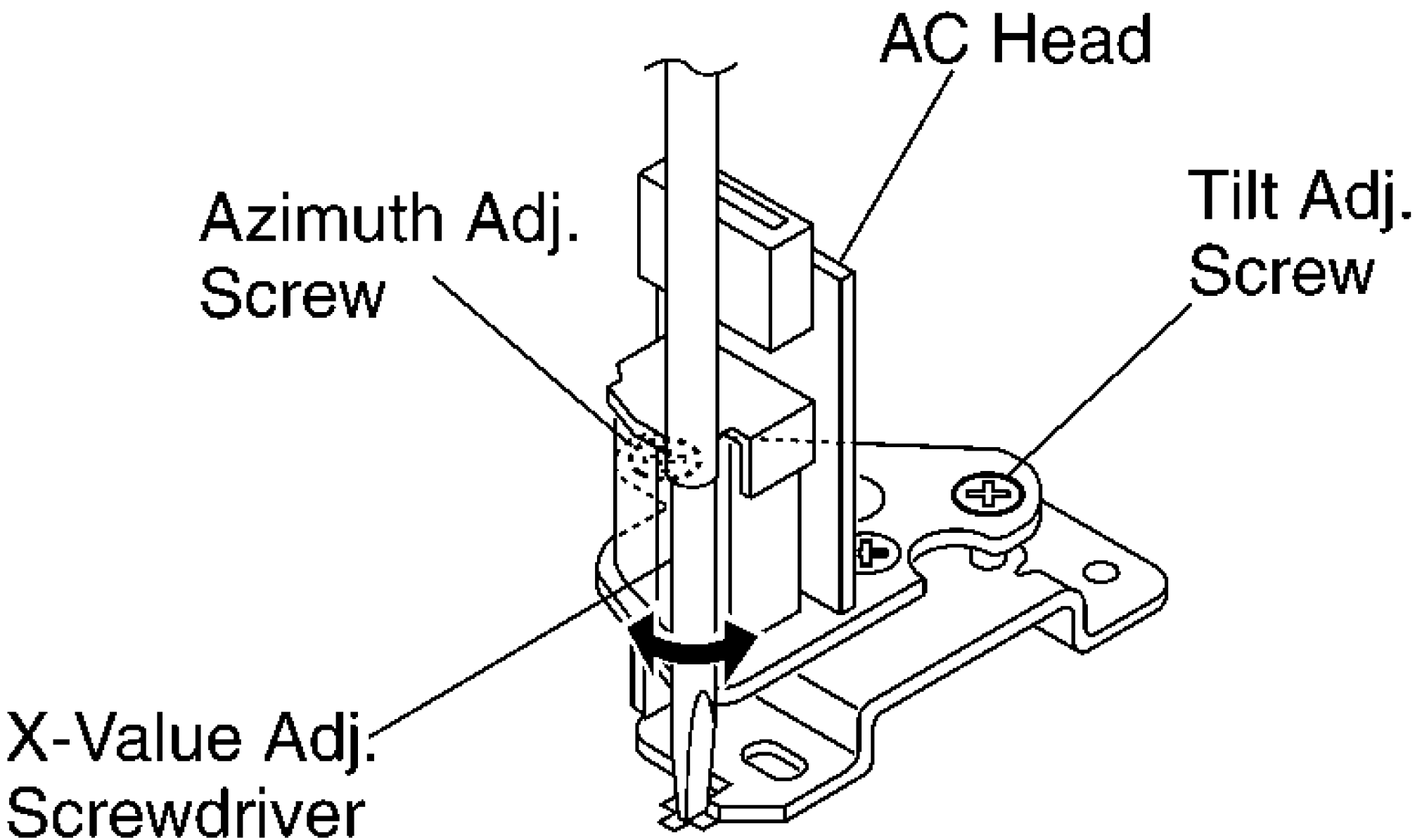

AC Head
Azimuth Adj.
Screw
Tilt Adj.
Screw
X-Value Adj.
Screwdriver

Fig. M6

Fig. M7

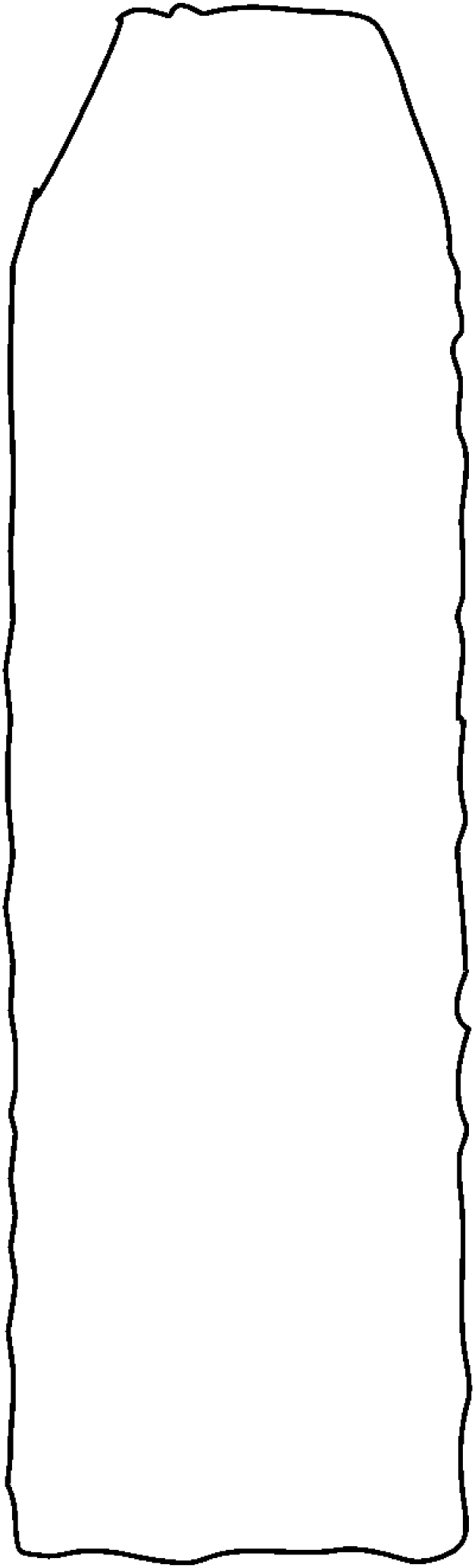


Fig. M9

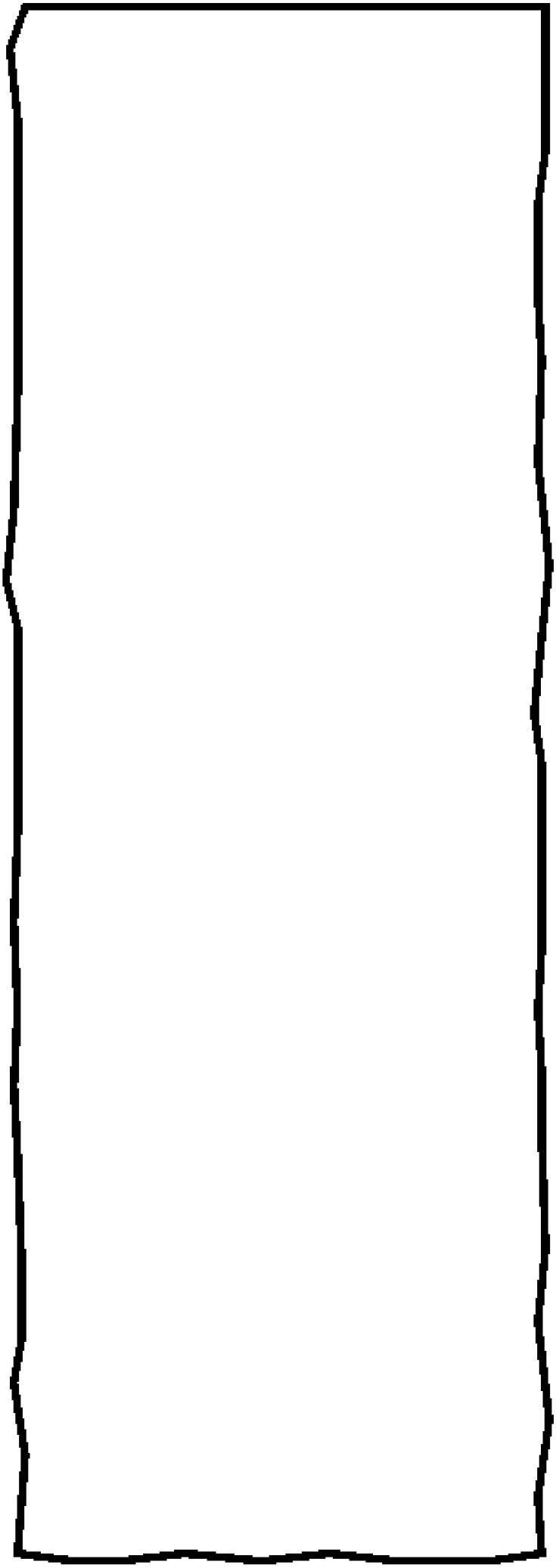
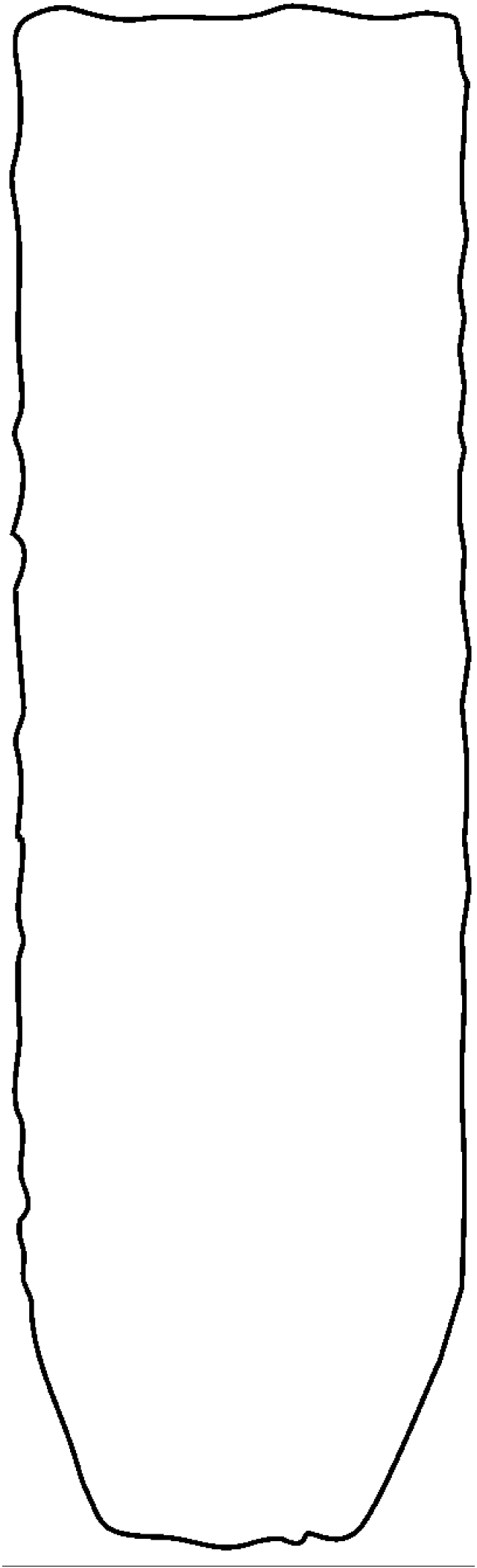


Fig. M8



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Manual 5871
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Rev. Date: 9-27-2000
Print Date: 3/16/05

Mechanical Diagrams

REFER TO SAFETY GUIDELINES

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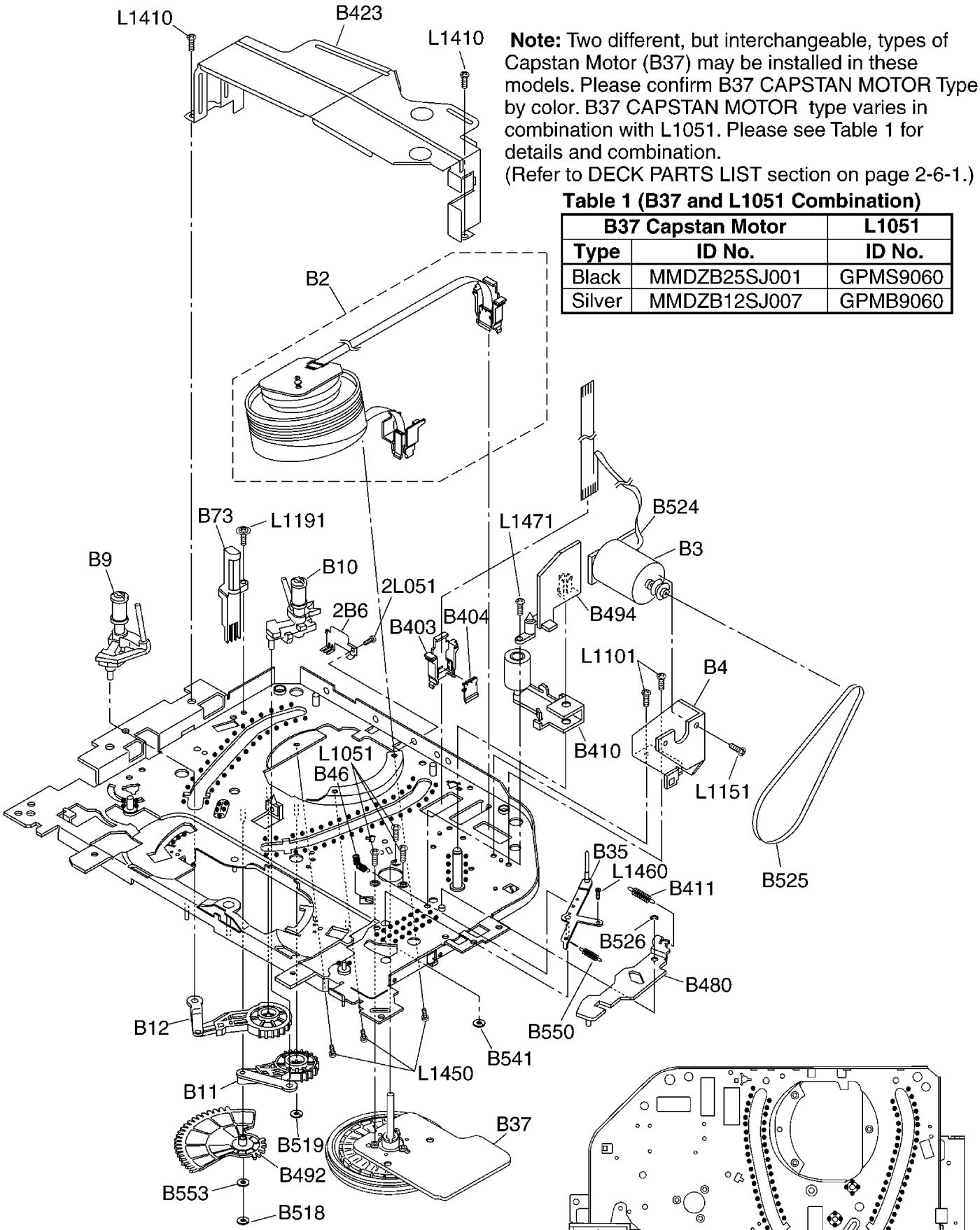
DECK EXPLODED VIEW 1

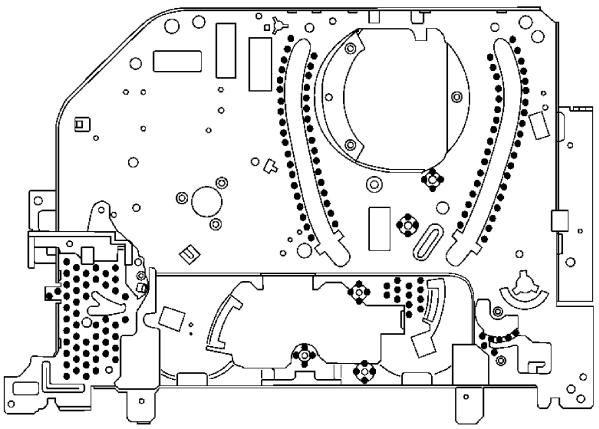
Mark	Description
•••••	Floil G-374G (Blue grease)



Note: Two different, but interchangeable, types of Capstan Motor (B37) may be installed in these models. Please confirm B37 CAPSTAN MOTOR Type by color. B37 CAPSTAN MOTOR type varies in combination with L1051. Please see Table 1 for details and combination.
(Refer to DECK PARTS LIST section on page 2-6-1.)

Table 1 (B37 and L1051 Combination)

B37 Capstan Motor		L1051
Type	ID No.	ID No.
Black	MMDZB25SJ001	GPMS9060
Silver	MMDZB12SJ007	GPMB9060



Chassis Assembly Bottom View (Grease Point)

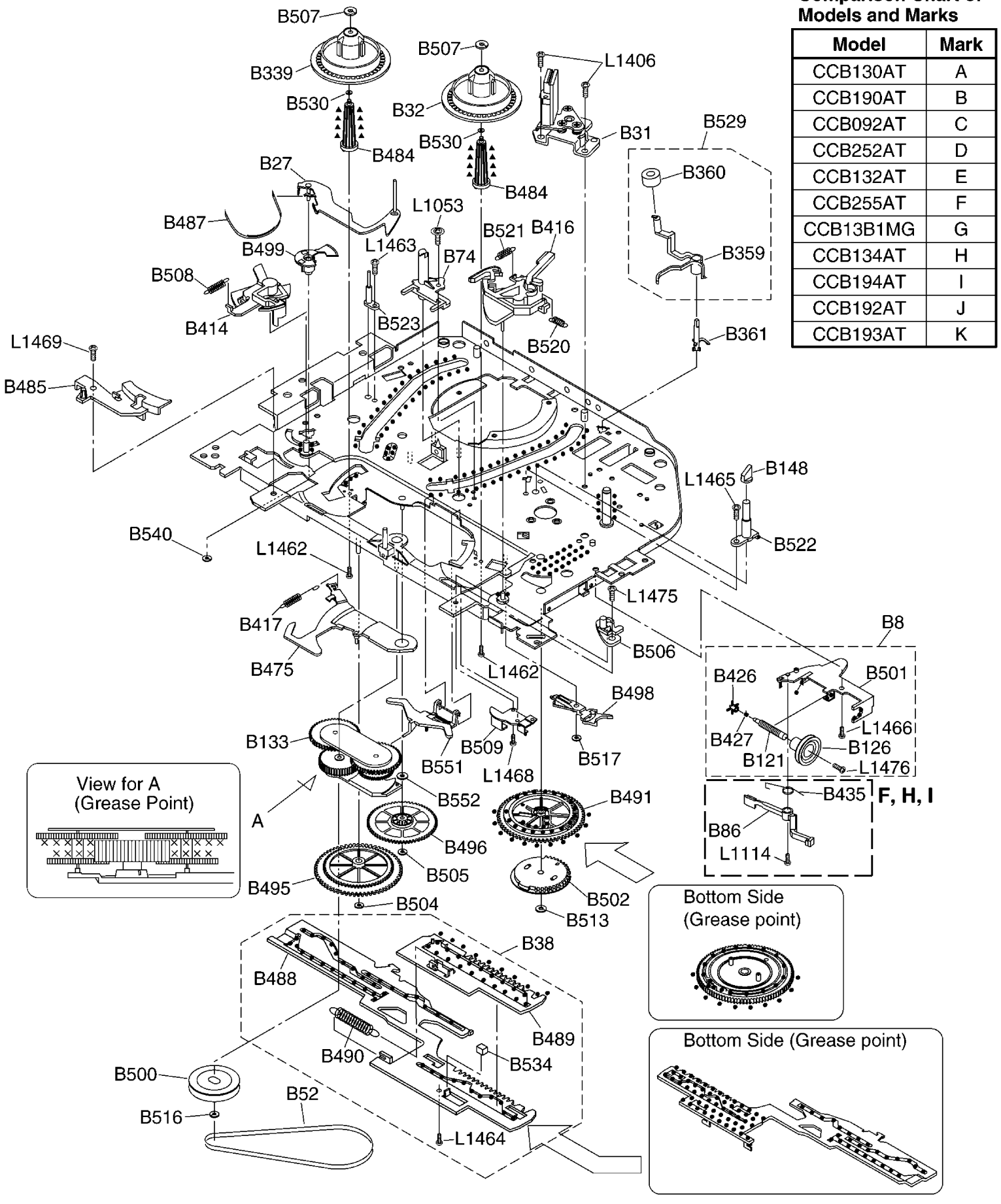
Some Ref. Numbers are not in sequence.

DECK EXPLODED VIEW 2

Mark	Description	
×××××	Sankol FG-84M	(White grease)
●●●●●	Floil G-374G	(Blue grease)
▲▲▲▲▲	Hydro-Fluid EP56	(Spindle oil)

Comparison Chart of Models and Marks

Model	Mark
CCB130AT	A
CCB190AT	B
CCB092AT	C
CCB252AT	D
CCB132AT	E
CCB255AT	F
CCB13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

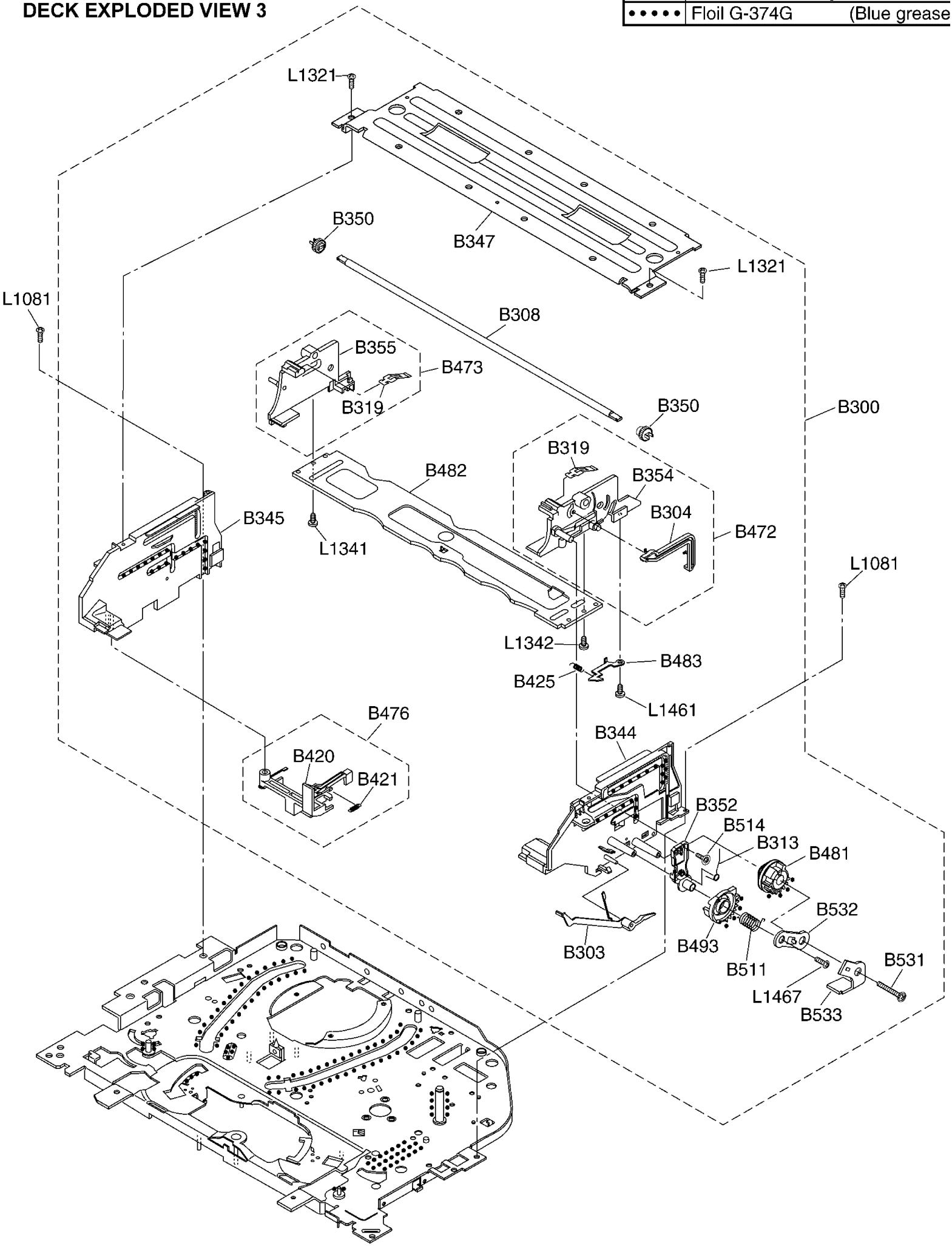


B359, B360 and B529: See the Mechanical Parts List.

Some Ref. Numbers are not in sequence.

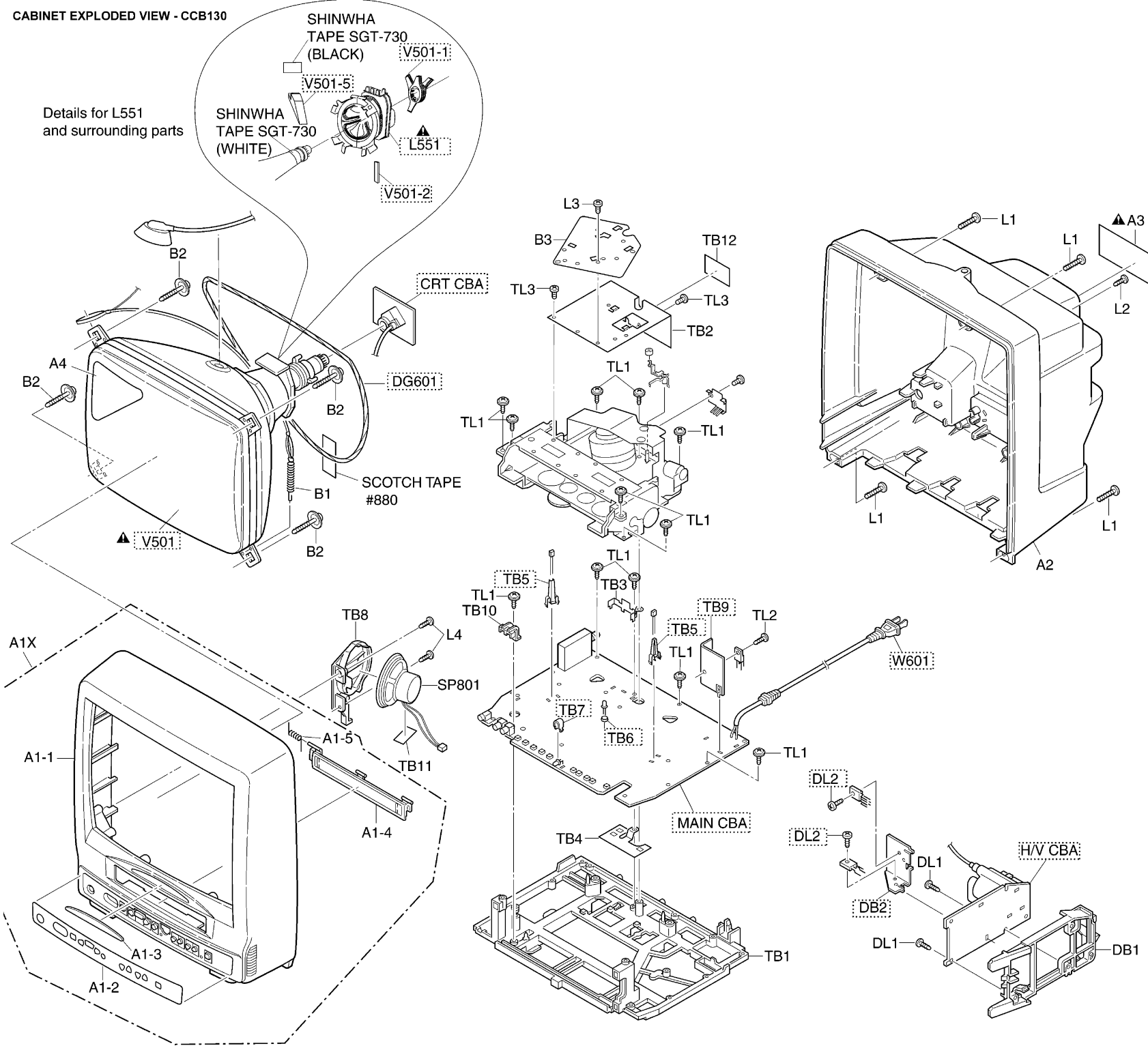
Mark	Description	
•••••	Floil G-374G	(Blue grease

DECK EXPLODED VIEW 3



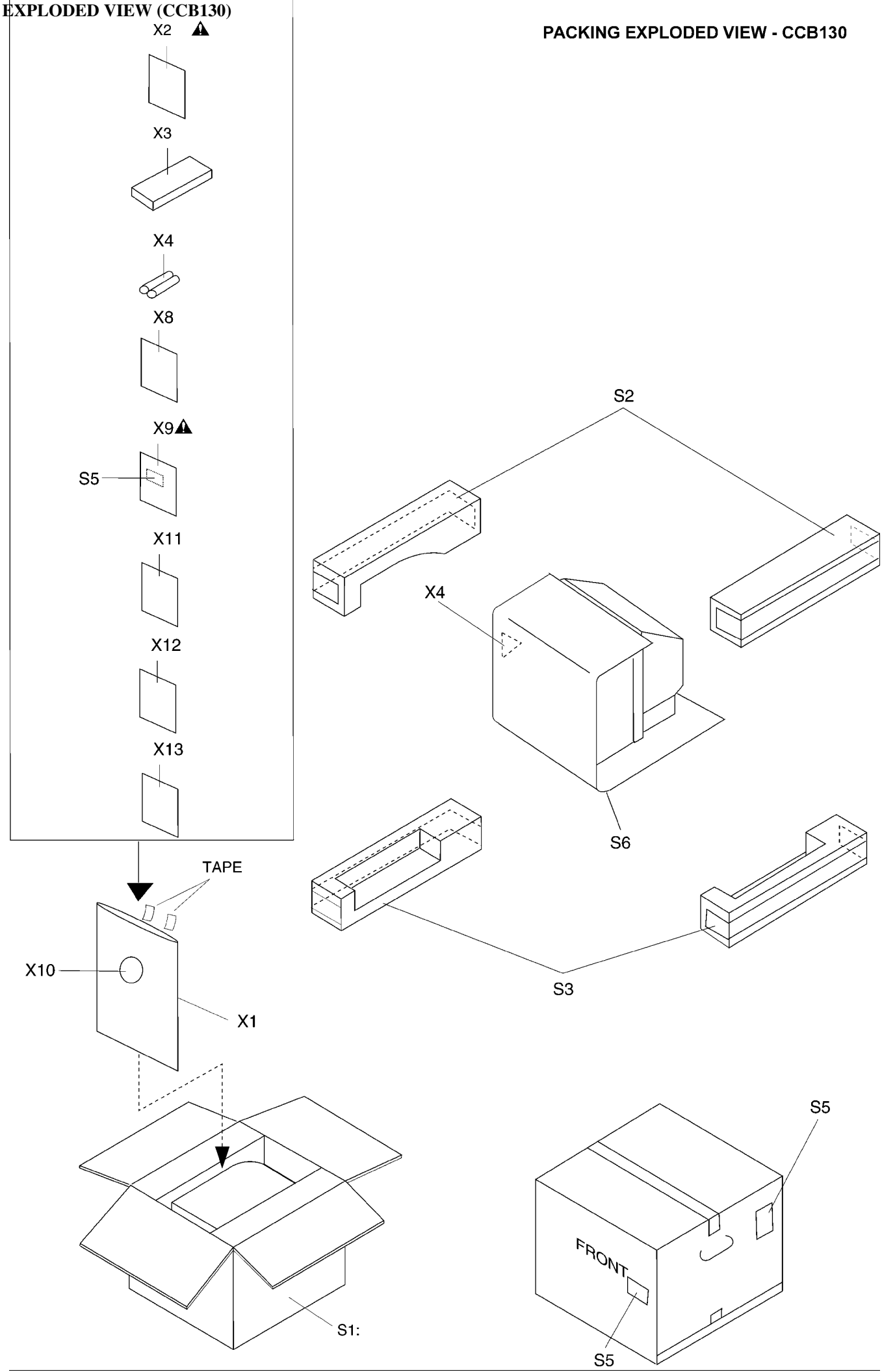
CABINET EXPLODED VIEW (CCB130,)

CABINET EXPLODED VIEW - CCB130



Marked parts See Electrical Parts List

PACKING EXPLODED VIEW - CCB130



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Troubleshooting

REFER TO SAFETY GUIDELINES

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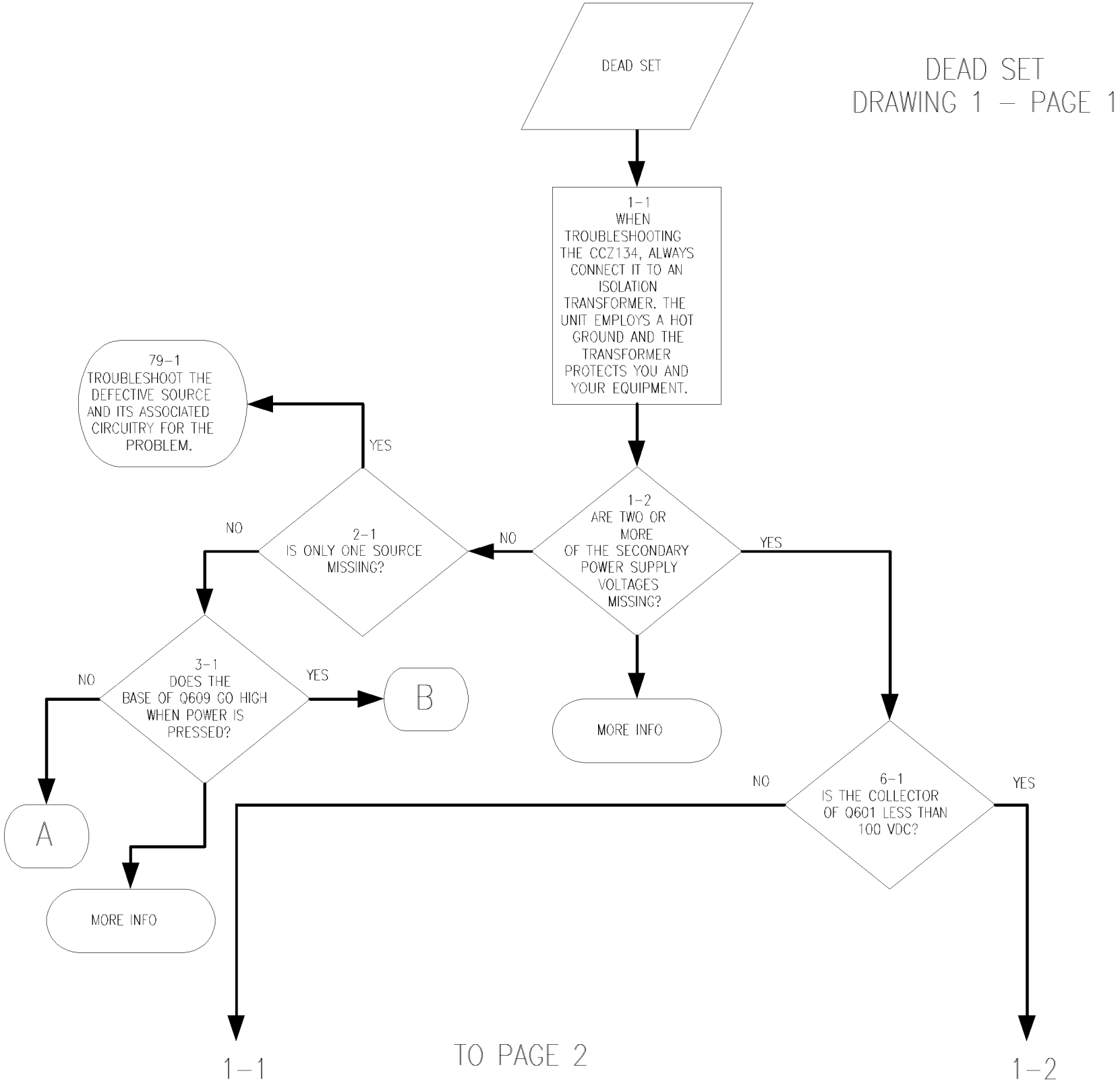
DEAD SET
DRAWING 1 – PAGE 1



DEAD SET
DRAWING 1 – PAGE 2

1–1

7–1
IS THE COLLECTOR OF Q601 MORE THAN 165VDC?

NO

8–1
SUSPECT AN OPEN C609. IF IT IS OPEN, REPLACE IT AND RESTART THE TROUBLESHOOTING PROCEDURE

MORE INFO

YES

9–1
IS EITHER Q601 OPEN OR Q602 SHORTED?

NO

18–1
IS R601, R602, R603, R604, R605, R607, OR R608 OPEN?

NO

10–1
SUSPECT A LOW SECONDARY RESISTANCE

MORE INFO

YES

MORE INFO

YES

14–1
CHECK FOR LOOSE CONNECTIONS IN THE DC PATH TO THE COLLECTOR OF Q601.

11–1
CHANGE THE DEFECTIVE PARTS AND PERFORM THE SPECIAL POWER SUPPLY TEST.

C

MORE INFO

1–2

12–1
IS F601 OPEN?

NO

13–1
IS R626 OPEN?

NO

YES

16–1
IS Q601 SHORTED?

YES

NO

YES

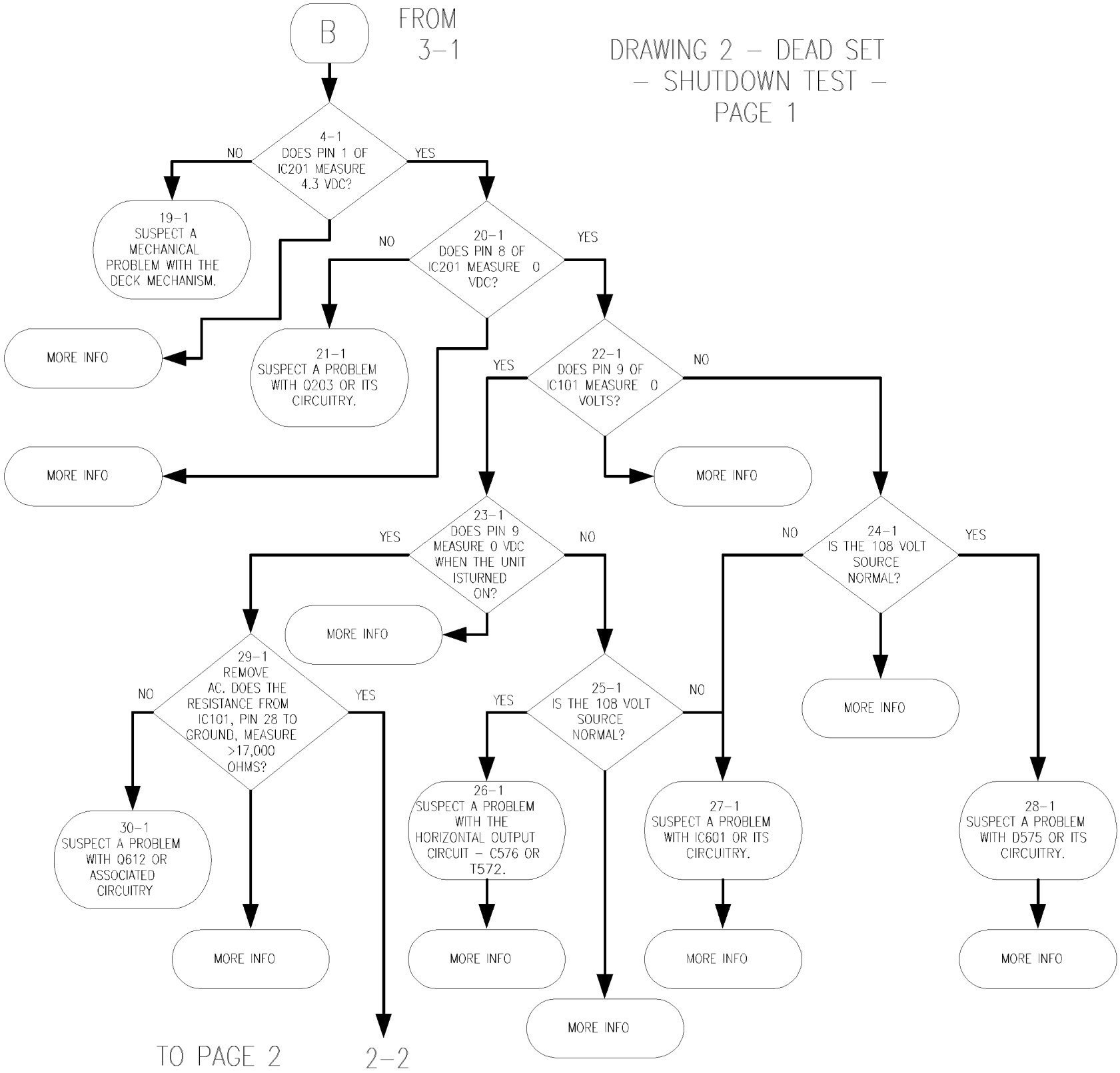
15–1
IS D609–D612 OR C609 SHORTED?

NO

YES

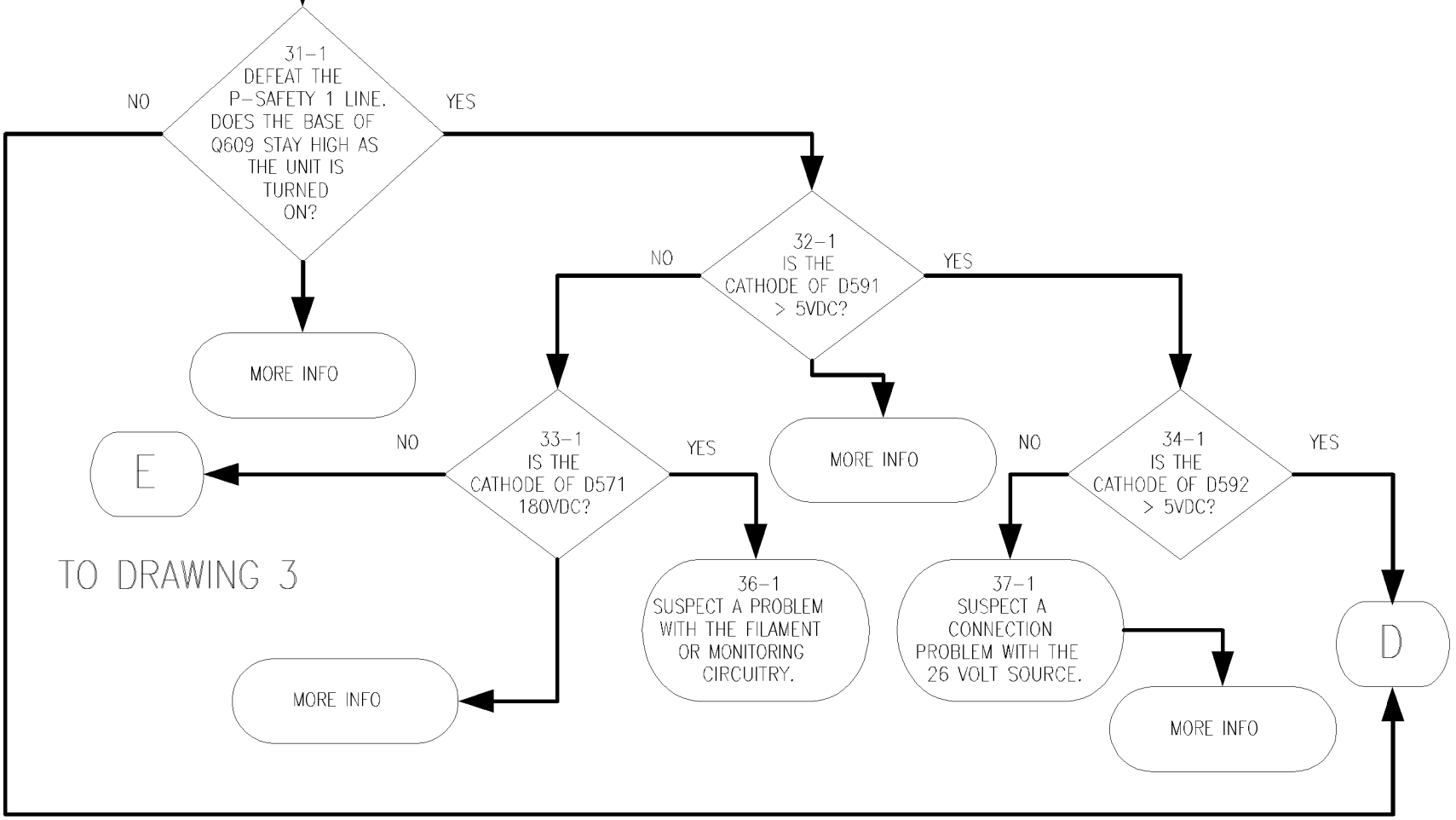
17–1
CHANGE THE DEFECTIVE PART OR PARTS AND CHECK FOR NORMAL OPERATION

MORE INFO


B
FROM 3-1
DRAWING 2 – DEAD SET – SHUTDOWN TEST – PAGE 1
4-1 DOES PIN 1 OF IC201 MEASURE 4.3 VDC?
NO
YES
19-1 SUSPECT A MECHANICAL PROBLEM WITH THE DECK MECHANISM.
MORE INFO
20-1 DOES PIN 8 OF IC201 MEASURE 0 VDC?
NO
YES
21-1 SUSPECT A PROBLEM WITH Q203 OR ITS CIRCUITRY.
MORE INFO
22-1 DOES PIN 9 OF IC101 MEASURE 0 VOLTS?
YES
NO
MORE INFO
23-1 DOES PIN 9 MEASURE 0 VDC WHEN THE UNIT ISTURNED ON?
YES
NO
MORE INFO
24-1 IS THE 108 VOLT SOURCE NORMAL?
NO
YES
MORE INFO
29-1 REMOVE AC. DOES THE RESISTANCE FROM IC101, PIN 28 TO GROUND, MEASURE >17,000 OHMS?
NO
YES
30-1 SUSPECT A PROBLEM WITH Q612 OR ASSOCIATED CIRCUITRY
MORE INFO
25-1 IS THE 108 VOLT SOURCE NORMAL?
YES
NO
26-1 SUSPECT A PROBLEM WITH THE HORIZONTAL OUTPUT CIRCUIT – C576 OR T572.
MORE INFO
MORE INFO
27-1 SUSPECT A PROBLEM WITH IC601 OR ITS CIRCUITRY.
MORE INFO
28-1 SUSPECT A PROBLEM WITH D575 OR ITS CIRCUITRY.
MORE INFO
TO PAGE 2
2-2

2-2

DRAWING 2 – PAGE 2



TO PAGE 3

D

FROM 34–1
OR 31–1

84–1
IF THERE IS NO PROBLEM WITH THE P–SAFETY 1 LINE, THE P–SAFETY 2 LINE MUST BE CHECKED NEXT. IF IT IS BELOW, OR DROPS BELOW A 5 VOLT LEVEL WHEN THE UNIT OPERATES, THE UNIT WILL TURN OFF. P–SAFETY 2 MONITORS THE SECONDARY POWER SUPPLY VOLTAGES. THE DIODES MONITORING THESE VOLTAGES ARE NORMALLY REVERSE BIASED. IF A SOURCE IS LOST, THE DIODE MONITORING THAT SOURCE WILL FORWARD BIAS AND PULL THE P–SAFETY 2 LINE LOW. MEASURE THE CATHODES OF THE MONITORING DIODES WITH A DC COUPLED SCOPE AS THE UNIT IS TURNED ON IN ORDER TO FIND A P–SAFETY 2 PROBLEM.

38–1
IS THE VOLTAGE PRESENT AT THE CATHODE OF D636 >5VDC?

NO

YES

39–1
MEASURE THE RESISTANCE OF THE SUPPLY LINE. ALL LINES SHOULD MEASURE > 900 OHMS. IF THE RESISTANCE IS NORMAL, CHECK THE SUPPLY LINE FOR AN OPEN PART OR LOOSE CONNECTION.

40–1
IS THE VOLTAGE PRESENT AT THE CATHODE OF D646 >5VDC?

NO

YES

41–1
IS THE VOLTAGE PRESENT AT THE CATHODE OF D647 >5VDC?

NO

YES

42–1
IS THE VOLTAGE PRESENT AT THE CATHODE OF D648 >5VDC?

NO

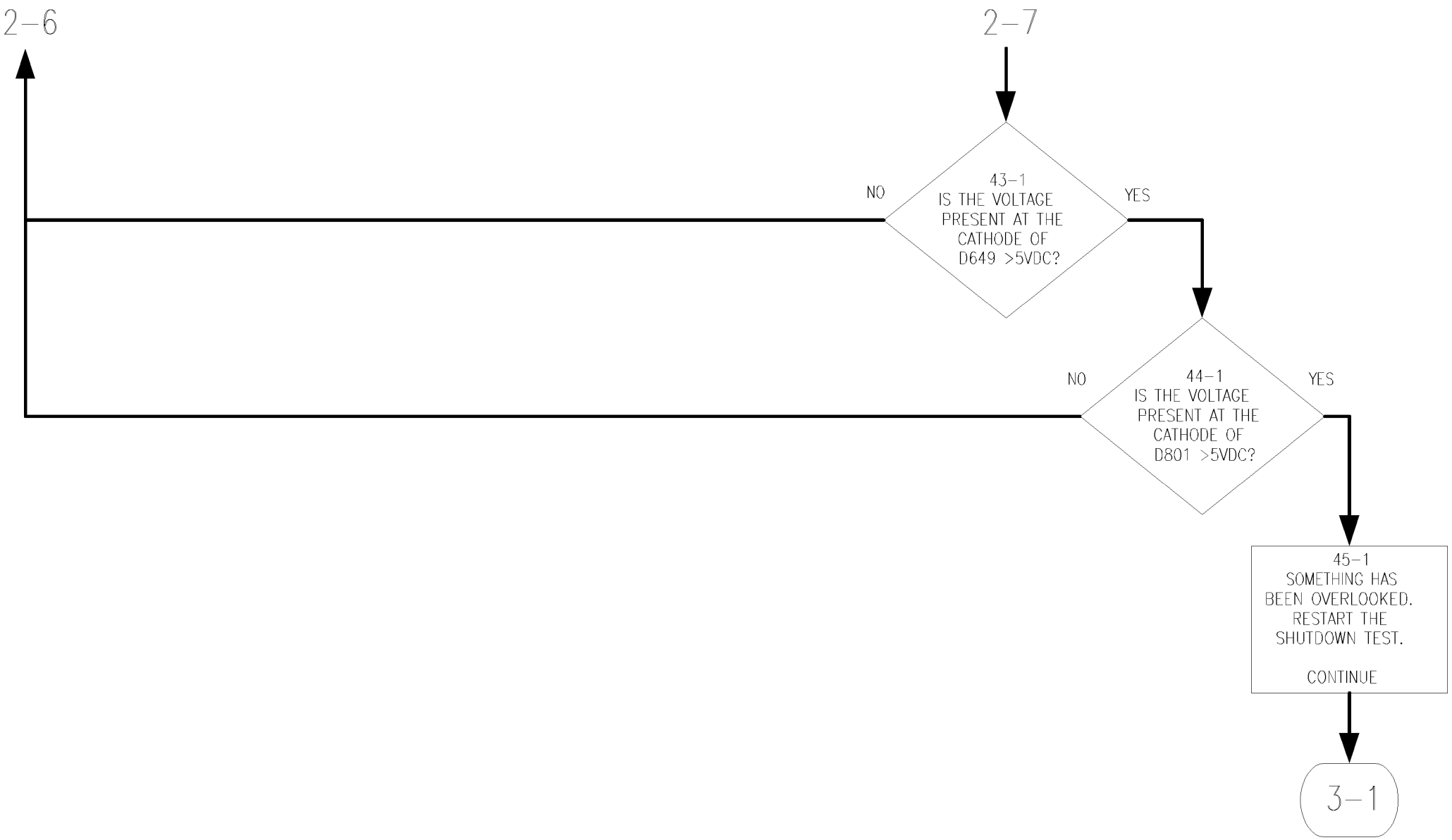
YES

2–6

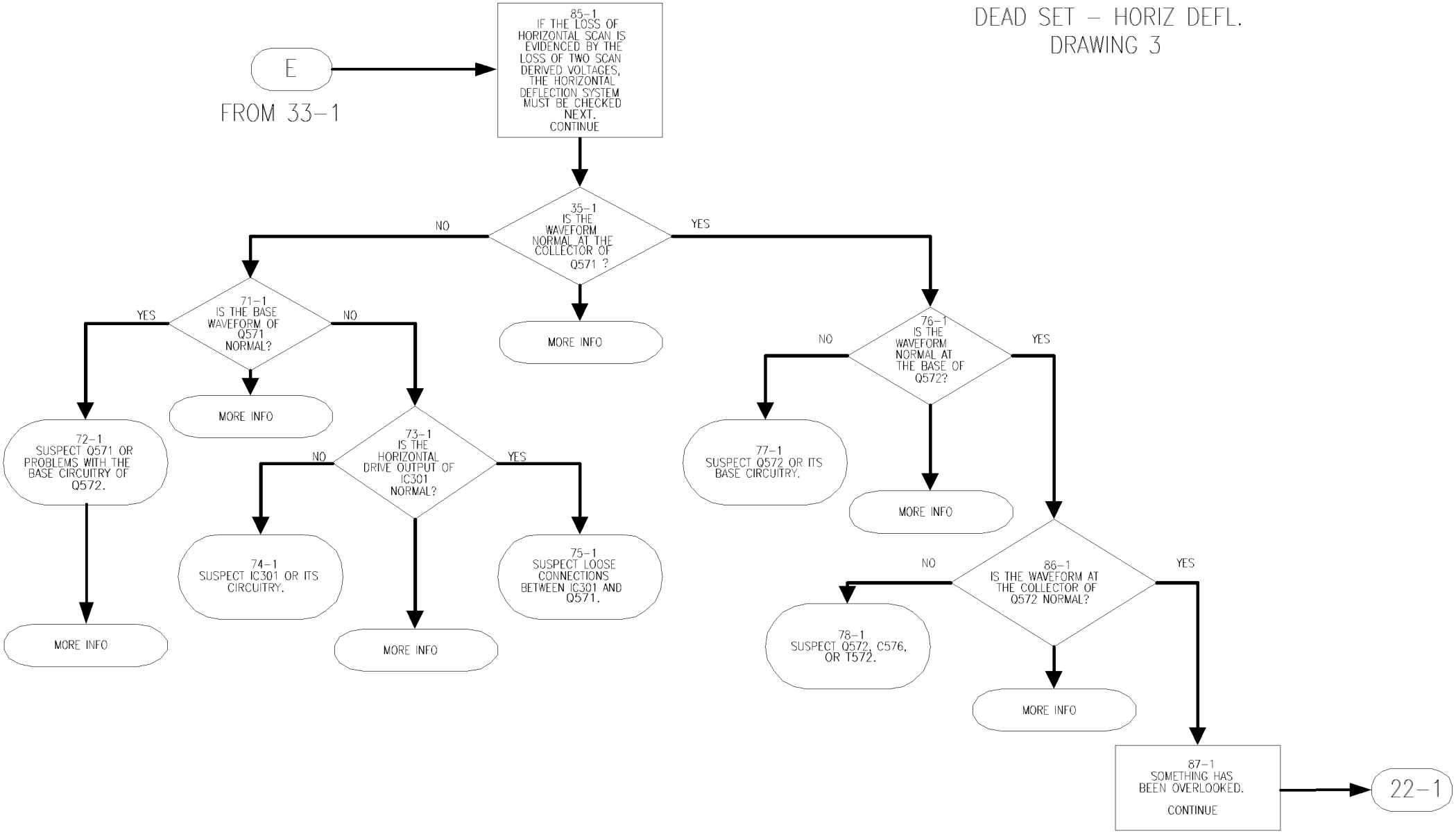
TO PAGE 4

2–7

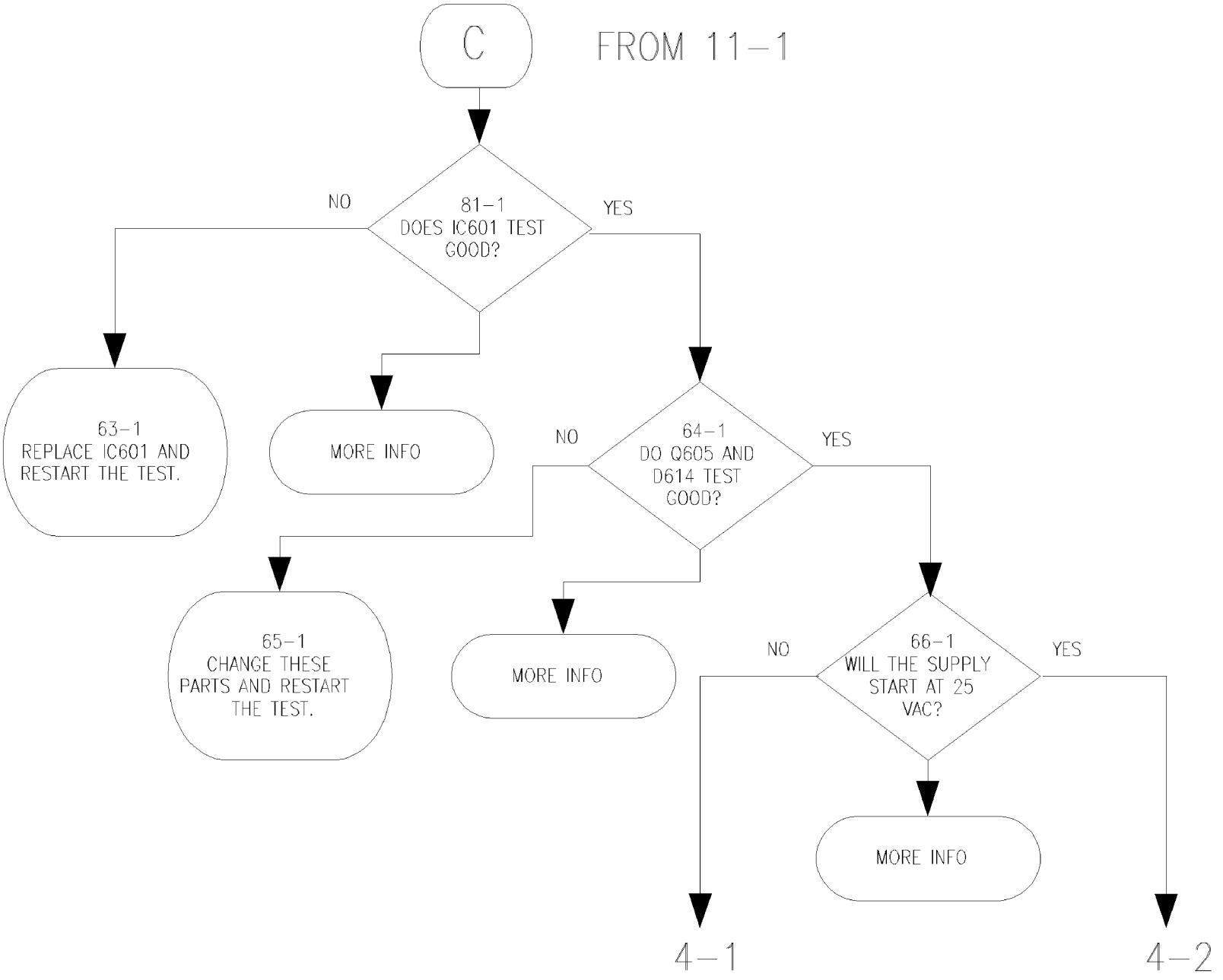
DRAWING 2 – PAGE 4



DEAD SET – HORIZ DEFL.
DRAWING 3

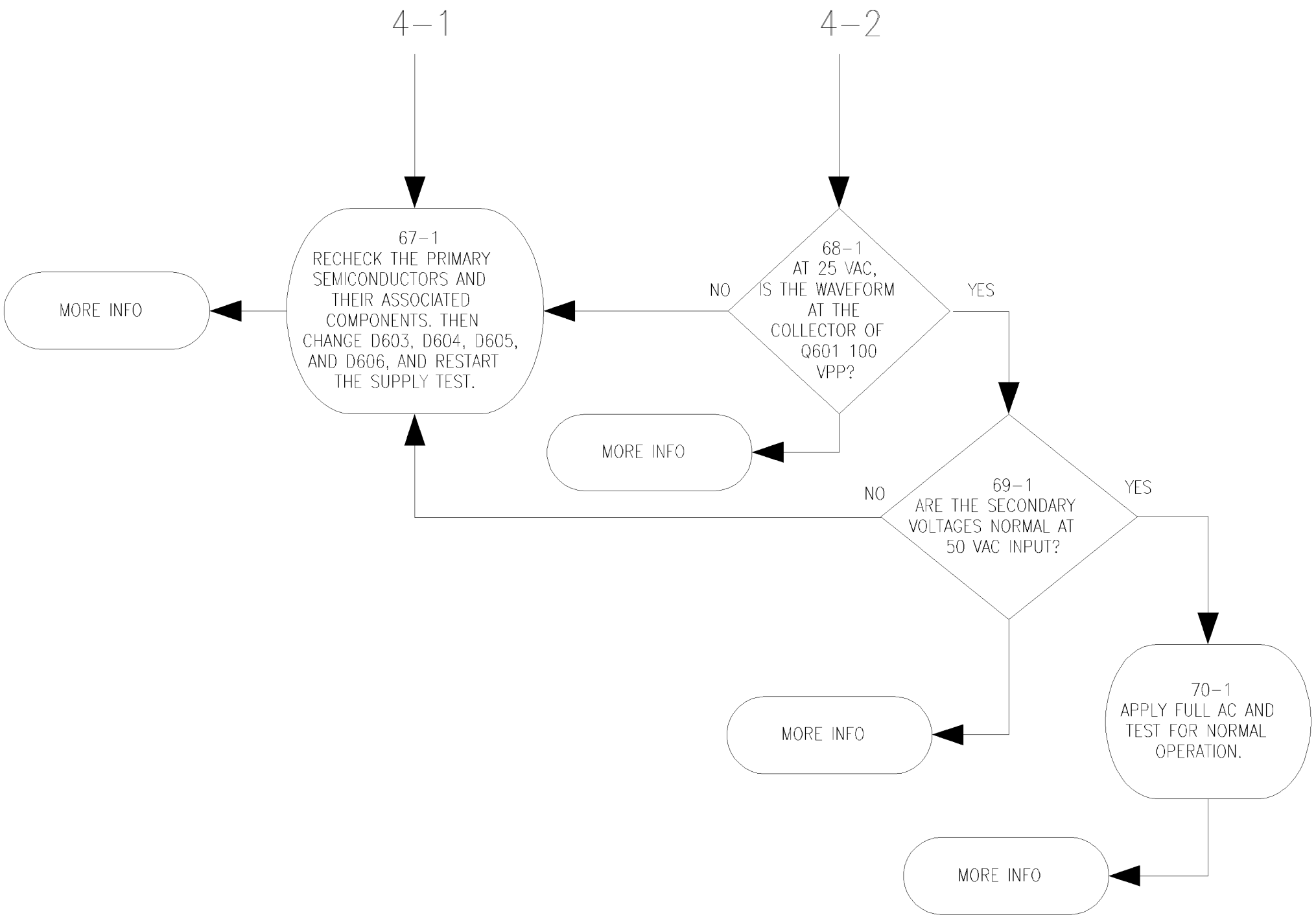


DRAWING 4 – PAGE 1
SPECIAL POWER SUPPLY TEST

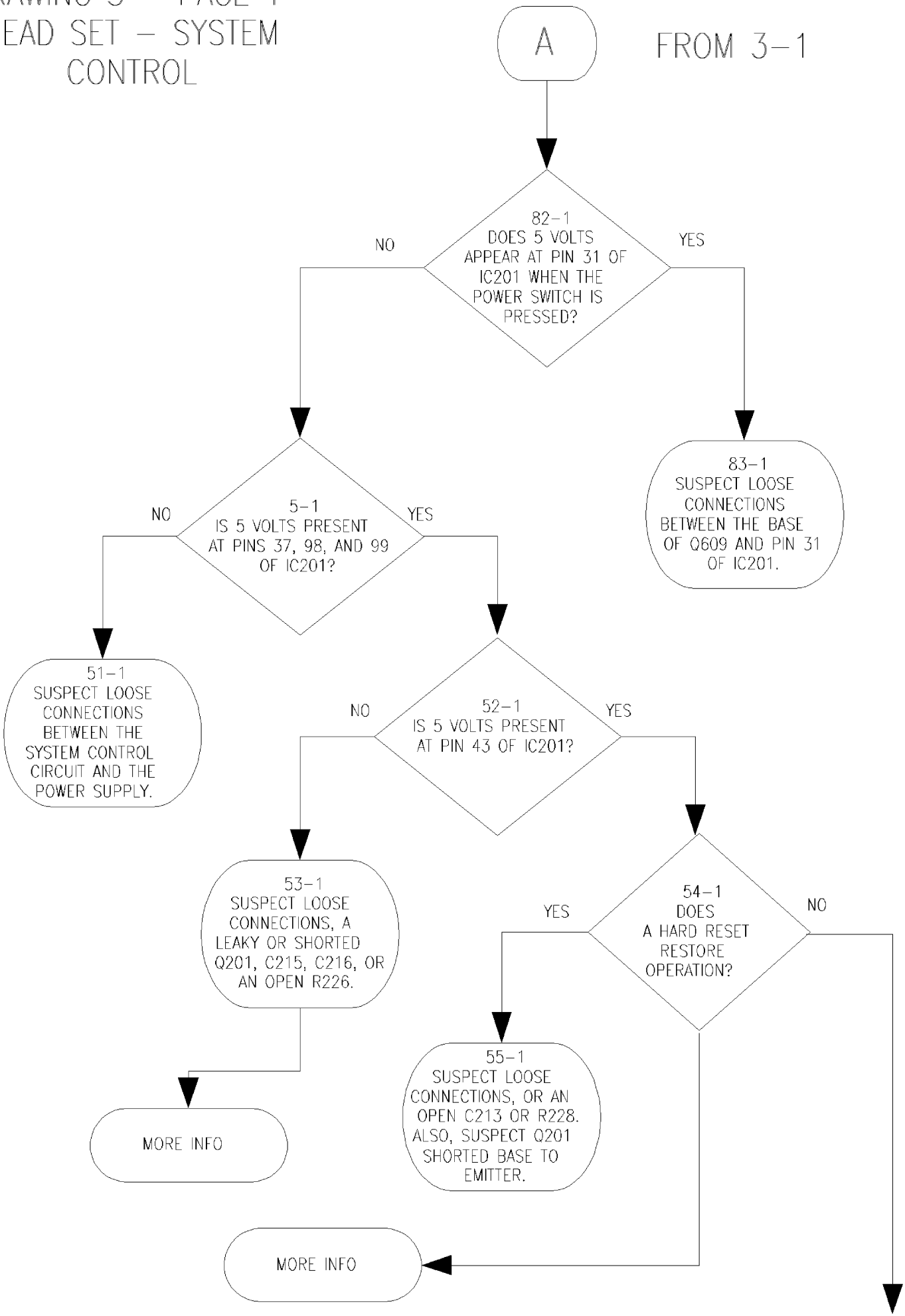


TO PAGE 2

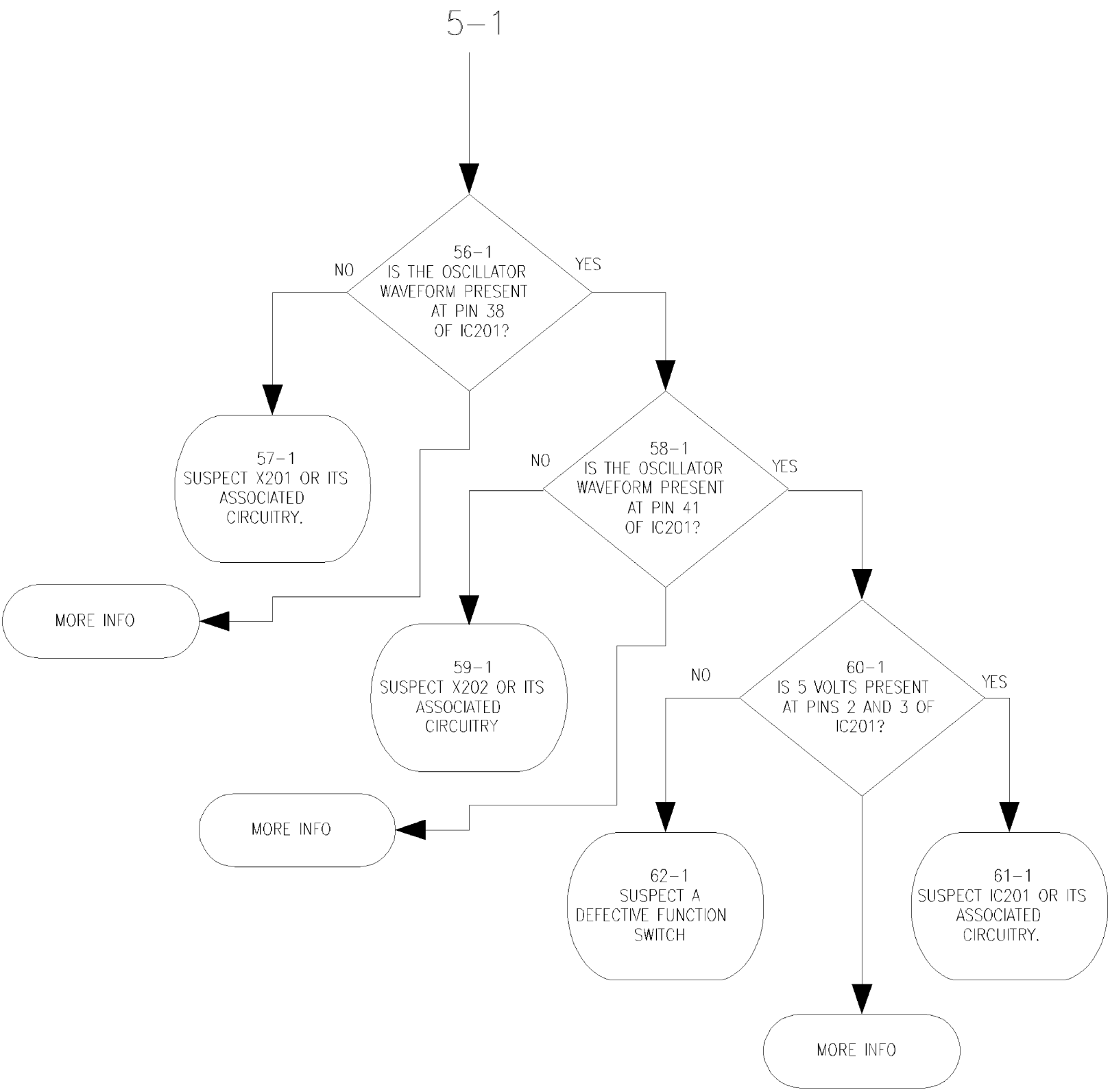
DRAWING 4 – PAGE 2



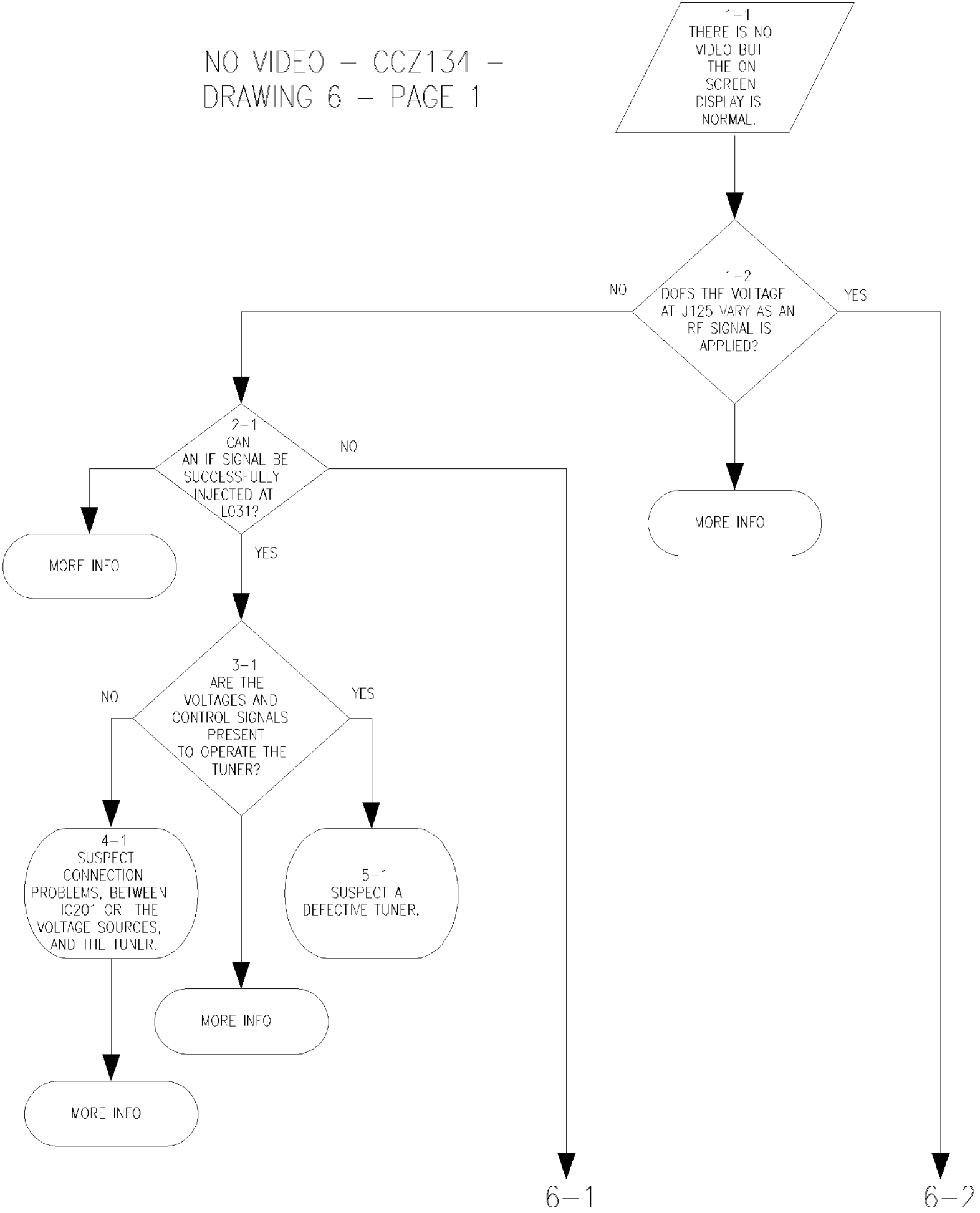
DRAWING 5 – PAGE 1 – DEAD SET – SYSTEM CONTROL


A
FROM 3–1
82–1
DOES 5 VOLTS APPEAR AT PIN 31 OF IC201 WHEN THE POWER SWITCH IS PRESSED?
NO
YES
83–1
SUSPECT LOOSE CONNECTIONS BETWEEN THE BASE OF Q609 AND PIN 31 OF IC201.
5–1
IS 5 VOLTS PRESENT AT PINS 37, 98, AND 99 OF IC201?
NO
YES
51–1
SUSPECT LOOSE CONNECTIONS BETWEEN THE SYSTEM CONTROL CIRCUIT AND THE POWER SUPPLY.
52–1
IS 5 VOLTS PRESENT AT PIN 43 OF IC201?
NO
YES
53–1
SUSPECT LOOSE CONNECTIONS, A LEAKY OR SHORTED Q201, C215, C216, OR AN OPEN R226.
54–1
DOES A HARD RESET RESTORE OPERATION?
YES
NO
55–1
SUSPECT LOOSE CONNECTIONS, OR AN OPEN C213 OR R228. ALSO, SUSPECT Q201 SHORTED BASE TO EMITTER.
MORE INFO
MORE INFO
TO PAGE 2

DRAWING 5 – PAGE 2

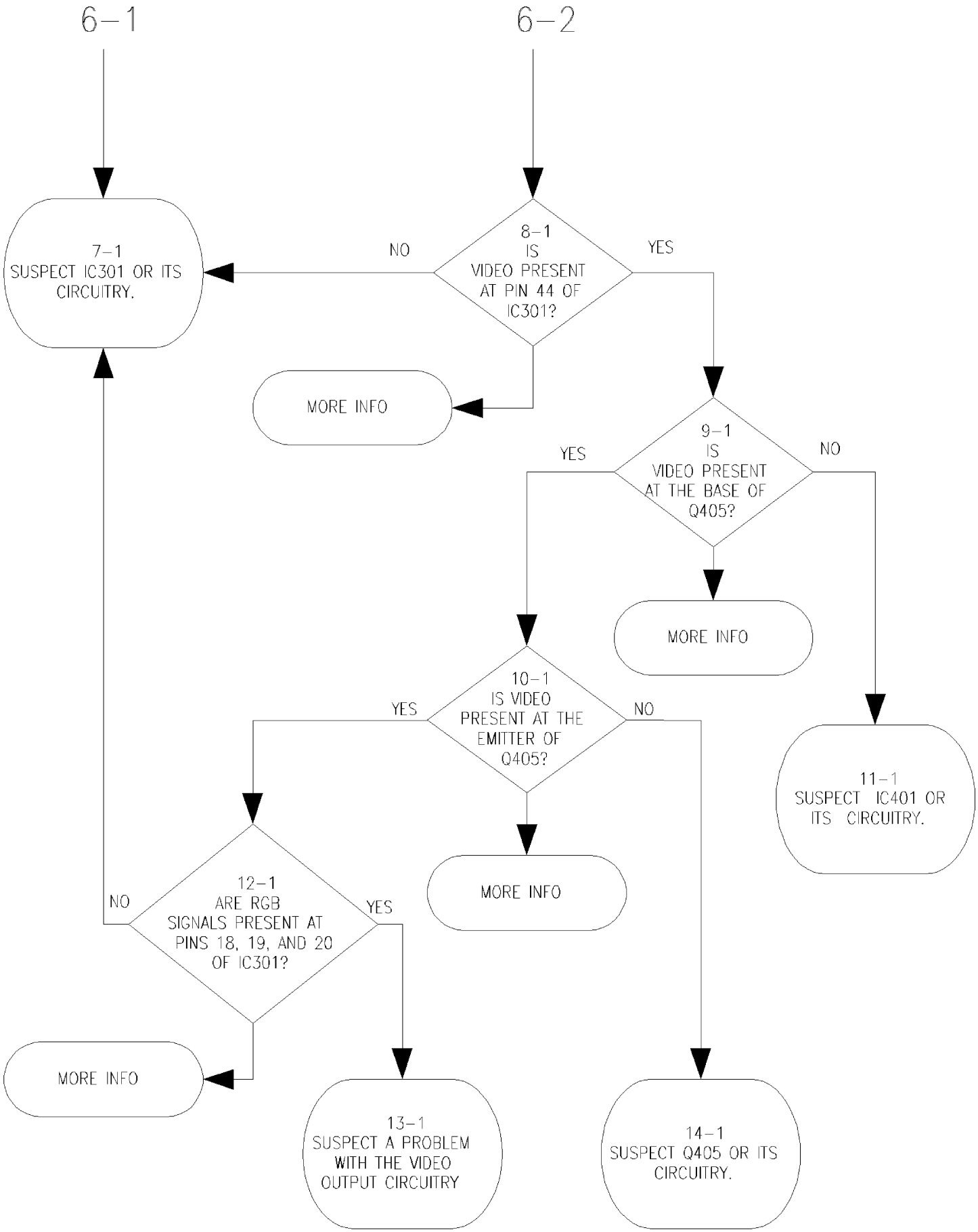


NO VIDEO – CCZ134 – DRAWING 6 – PAGE 1



TO PAGE 2

DRAWING 6 –
PAGE 2



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Manual 5871
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General Information

REFER TO SAFETY GUIDELINES

SAFETY NOTICE: ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

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SPECIFICATIONS (CCB092)

Mode: SP mode unless otherwise specified
Test input terminal:
<Except Tuner> Video input (1Vp-p)
Audio input (-10dB)
<Tuner> Ant. input (80dBμV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	±5
2. Linearity	Horizontal	%	—	12
	Vertical	%	—	10
3. High Voltage	—	kV	18	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	mm	—	0.3
	Corner	mm	—	1.5
	Side	mm	—	1.2
2. Tint Control Range	—	deg	±30	—
3. Contrast Control Range	—	dB	6	—
4. Brightness	APL 100%	ft-L	30	—
5. Color Temperature	—	K	9200	—

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal Resolution	(R/P)	Line	230	200
2. Jitter (Low)	(R/P)	μS	0.05	0.2
3. S/N Chroma AM (SP)	(R/P)	dB	38	33
PM (SP)	(R/P)	dB	36	33
4. Wow & Flutter (RMS)	(R/P)	%	0.25	0.5

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	43	40

<AUDIO>

All items are measured across 8W resistor at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power (Max.)	(R/P)	W	0.8	0.6
2. Audio S/N (W/LPF)	(R/P)	dB	40	36
3. Audio Distortion (W/LPF)	(R/P)	%	3.0	5.0
4. Audio Freq. Response (-10dB Ref. 1kHz)	200Hz (R/P) 8kHz (R/P)	dB dB	-2.0 0	-2.0 ± 5.0 0 ± 6.0

Note: Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit

specifications.

SPECIFICATIONS (CCB130AT, CCB132AT)

V Mode: SP mode unless otherwise specified
V Test input terminal
<Except Tuner>: Video input (1Vp-p)
Audio input (-10dB)
<Tuner>: Ant. input (80dBmV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	—
2. Linearity	Horizontal Vertical	% %	— —	15 10
3. High Voltage	—	kV	22	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center Corner Side	mm mm mm	— — —	0.3 1.5 1.2
2. Tint Control Range	—	deg	± 30	—
3. Contrast Control Range	—	dB	6	4
4. Brightness	APL 100%	ft-L	55	40
5. Color Temperature	—	K	9200	—

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal Resolution	(R/P)	Line	230	200
2. Jitter (Low)	(R/P)	µS	0.05	0.2
3. S/N Chroma AM (SP) PM (SP)	(R/P) (R/P)	dB dB	38 36	33 33
4. Wow & Flutter (RMS)	(R/P)	%	0.25	0.5

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	43	40

<AUDIO>

All items are measured across 8W resistor at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power (Max.)	(R/P)	W	1.0	0.8
2.Audio S/N (W/LPF)	(R/P)	dB	40	36
3. Audio Distortion (W/LPF)	(R/P)	%	3.0	5.0
4. Audio Freq. Response (-10dB Ref. 1kHz)	200Hz (R/P) 8 kHz (R/P)	dB dB	-2.0 0	-2.0 ± 5.0 0 ± 6.0

Note: Nominal specifications represent the design specifications. All units should be

able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

SPECIFICATIONS (CCB190AT, CCB13B1MG, CCB134AT, CCB192AT, CCB193AT, CCB194AT)

V Mode: SP mode unless otherwise specified
V Test input terminal
<Except Tuner>: Video input (1Vp-p)
Audio input (-10dB)
<Tuner>: Ant. input (80dBmV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	—
2. Linearity	Horizontal Vertical	% %	— —	15 10
3. High Voltage	—	kV	25	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center Corner Side	m/m m/m m/m	— — —	0.3 1.5 1.2
2. Tint Control Range	—	deg	± 30	—
3. Contrast Control Range	—	dB	6	4
4. Brightness	APL 100%	ft-L	35	40
5. Color Temperature	—	K	9200	—

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal Resolution	(R/P)	Line	230	200
2. Jitter (Low)	(R/P)	µS	0.05	0.2
3. S/N Chroma AM (SP) PM (SP)	(R/P) (R/P)	dB dB	38 36	33 33
4. Wow & Flutter (RMS)	(R/P)	%	0.25	0.5

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	43	40

<AUDIO>

All items are measured across 8W resistor at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power (Max.)	(R/P)	W	1.0	0.8
2. Audio S/N (W/LPF)	(R/P)	dB	40	36
3. Audio Distortion (W/LPF)	(R/P)	%	3.0	5.0
4. Audio Freq. Response (-10dB Ref. 1kHz)	200Hz (R/P) 8kHz (R/P)	dB dB	-2.0 0	-2.0 ± 5.0 0 ± 6.0

Note: Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

SPECIFICATIONS (CCB252AT, CCB255AT)

V Mode: SP mode unless otherwise specified
V Test input terminal
<Except Tuner>: Video input (1Vp-p)
Audio input (-10dB)
<Tuner>: Ant. input (80dBmV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	—
2. Linearity	Horizontal Vertical	% %	— —	15 15
3. High Voltage	—	kV	29	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center Corner Side	m/m m/m m/m	— — —	0.4 2.5 1.5
2. Tint Control Range	—	deg	± 30	—
3. Contrast Control Range	—	dB	6	—
4. Brightness	APL 100%	ft-L	30	20
5. Color Temperature	—	K	8500-20MPCD	—

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal Resolution	(R/P)	Line	230	200
2. Jitter (Low)	(R/P)	µS	0.05	0.2
3. S/N Chroma AM (SP) PM (SP)	(R/P) (R/P)	dB dB	38 36	33 33
4. Wow & Flutter (RMS)	(R/P)	%	0.25	0.5

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	43	40

<AUDIO>

All items are measured across 8W resistor at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power (Max.)	(R/P)	W	1.0	0.8
2. Audio S/N (W/LPF)	(R/P)	dB	40	36
3. Audio Distortion (W/LPF)	(R/P)	%	3.0	5.0
4. Audio Freq. Response (-10dB Ref. 1kHz)	200Hz (R/P) 8kHz (R/P)	dB dB	-2.0 0	-2.0 ± 5.0 0 ± 6.0

Note: Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

STANDARD MAINTENANCE
Service Schedule of Components

H: Hours O: Check XX: Change

Deck		Periodic Service Schedule			
Ref. No.	**Part Name**	**1,000 H**	**2,000 H**	**3,000 H**	**4,000 H**
B2	Cylinder Assembly	O	XX	O	XX
B3	Loading Motor Assembly			XX	
B8	Pulley Assembly		XX		XX
B27	Tension Lever Assembly		XX		XX
B31	AC Head Assembly			XX	
B32, B339	Reel (T), Reel (S)			XX	
B37	Capstan Motor		XX		XX
B52	Capstan Belt		XX		XX
*B73	FE Head CBA			XX	
B133	Idler Assembly		XX		XX
B410	Pinch Arm (A) Assembly		XX		XX
B414	Main Brake S Assembly		XX		XX
B416	Main Brake T Sub Assembly		XX		XX
B525	Loading Belt		XX		XX

Notes:
1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.

3. For the reference numbers listed above, refer to Deck Exploded Views.
   * B73 ———VCR Model only

Cleaning

Cleaning of Video Head
Clean the head with a head cleaning stick or chamois cloth.

Procedure
1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:
1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.

Cleaning of Audio Control Head
Clean the head with a cotton swab.

Procedure
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

Notes:
1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.

Philips Consumer Electronics

Technical Service Data

Service and Quality
Service Publications Dept.
One Philips Drive
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Electrical Adjustments

REFER TO SAFETY GUIDELINES

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ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is abbreviation for "Circuit Board Assembly."

NOTE:
Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. NTSC Pattern Generator (Color Bar w/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. AC Milli Voltmeter (RMS)
3. Alignment Tape (VFMS0001H6), Blank Tape
4. DC Voltmeter
5. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div,
   F-Range: DC~AC-60MHz
6. Frequency Counter
7. Plastic Tip Driver

x-Ray Protection Test

X-ray protection test should be done when replacing any parts of this chassis.

1. Short test points J535 and J536 (on H.V. CBA).
2. Confirm that the main power turns off.
3. If the main power does not turn off, then replace the following parts (D591, Q591, R592, R593, R594 and IC201).
4. Perform steps 1 through 3 again.

PREPARATION FOR SERVICING

How to Use U21 Deck Extension Cable

(1) Remove Deck Mechanism Assembly. If needed, remove the Main CBA from Tray Chassis. Refer to "Cabinet Disassembly Instructions."

(2) Connect Main CBA and Deck with the U21 Deck Extension Cable (A) as shown in **Fig. 1**. And connect Main CBA and Deck with U21 Deck Extension cable (B) as shown in Fig. 1. Connect a clip on U21 Deck Extension Cable (B) to J264 on the Main CBA.

(U21 Deck Extension Cable: 4835 310 57491)

(3) Set SW212(LD-SW) on the Main CBA to Service position shown in Fig.1.

Note 1: There are 3 types of U21 Deck Extension Cable (A). They are for 2 Head, 4 Head, and Hi-Fi. Use a connector indicated as shown. Be careful not to let the unused connector contact other parts.

Note 2: Some noise will be present in the playback picture when the extension cable is used.

Note 3: Before installing the Deck Assembly, be sure to align two triangle marks of SW1001 on U21 Deck Extension Cable (B). Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of SW1001, the shaft of Cam Gear with the hole of SW1001 as shown in **Fig.2**.

How to Enter the Service Mode

Caution: 1

1. Optical sensors system are used for Tape Start and End Sensor on this equipment. Read this page carefully and prepare as described on this page before starting to service; otherwise, the unit may operate unexpectedly.

Preparing: 1

1. Cover Q202 (START SENSOR) and Q201 (END SENSOR) with Insulation Tape or enter the service mode to activate Sensor Inhibition automatically.

Note: Avoid playing, rewinding or fast forwarding the tape to its beginning or end, because both Tape End Sensors are not active.

1. Turn set on.
2. Turn set off and at the front of the unit while pressing the 2-7-1 and mute keys simultaneously on the remote control.
3. This procedure must be done promptly prior to the power supply discharging completely.
4. To exit the service mode power the unit off at the Front key board.

Details are as follows.

Key	Adjustment Mode
MENU	Picture adjustment mode: Press the MENU button to change from BRT (Bright), *CNT (Contrast), *CLR (Color), *TNT(Tint) and *V-T. Press CH UP/DOWN key to display Initial Value, Maximum and Minimum cyclically. *Marked items are not necessary to adjust normally.
0	C-Trap adjustment mode: See adjustment instructions.
1	No need to use.
2	AGC/H adjustment mode: See adjustment instructions.
3	Auto AFT adjustment mode: See adjustment instructions .
4	Auto record mode: Perform recording (15 Sec.)-->Stop-->Rewind (Zero return) automatically.
5	Head switching point adjustment mode: See adjustment instructions.
6	No need to use.
7	Purity check mode: Shows Red, Green or Blue on the screen when the CH UP/DOWN keys are pressed.
8	H. Shift adjustment mode: See adjustment instructions.
9	V.size/V. shift adjustment: See adjustment instructions.

Caution: 2

1. The deck mechanism assembly is mounted on the Main CBA directly, and SW211 (REC-SAFETY SW) is mounted on the Main CBA. When deck mechanism assembly is removed from the Main CBA due to servicing, this switch can not be operated automatically.

Preparing: 2

1. To eject the tape, press the STOP/EJECT button on the unit (or Remote Control).
2. When you want to record during the Service mode, press the Rec button while depressing SW211 (REC-SAFETY SW) on the Main CBA.

How to Set up the Service mode:

1. Use the service remote control unit.
2. Turn the power on.
3. Press "WAKE-UP/SLEEP" button on the service remote control unit.

DC (+B) Adjustment (AC Power) (CCB092AT)

Purpose: To obtain correct operation.
Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

	Adjustment Point	Mode	Inpu
J553(+B) J563(GND)	VR1620	—	—
Tape	**M. EQ.**	**Spec.**	
—	DC Voltmeter	+117 ± 0.5V DC	

Note: J553(+B), J563(GND), VR601 — H.V. CBA
VR1620 — Power Supply CBA

1. Connect the unit to AC Power Outlet.
2. Connect DC Voltmeter to J553(+B) and J563(GND).
3. Adjust VR1620 so that the voltage of J553(+B) becomes +117 ± 0.5V DC.

DC (+B) Adjustment (DC Power) (CCB092AT)

Purpose: To obtain correct operation.
Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adjustment Point	Mode	Input
J553(+B) J563(GND)	VR1951	—	—
Tape	**M. EQ.**	**Spec.**	
—	DC Voltmeter	+117 ± 0.5V DC	

Note: J553(+B), J563(GND), VR601 — H.V. CBA
VR1951 — Power Supply CBA

1. Input 13.2V DC to DC Jack.
2. Connect DC Voltmeter to J553(+B) and J563(GND).
3. Adjust VR1951 so that the voltage of J553(+B) becomes +117± 0.5V DC.

DC (+B) Adjustment (CCB130AT, CCB132AT & CCB190AT)

Purpose: To obtain correct operation.
Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adjustment Point	Mode	Input

J297 (+B) J257 (GND)	VR601	—	—
Tape	**M. EQ.**	**Spec.**	
—	DC Voltmeter	+105 ± 0.5V DC (CCB130AT, CCB132AT, CCB13B1, CCB134AT) +114 ± 0.5V DC (CCB190AT, CCB192AT, CCB193AT, CCB194AT)	

Note: J297(+B), J257(GND), VR601 — Main CBA

1. Connect the unit to AC Power Outlet.
2. Connect DC Voltmeter to J297(+B) and J257(GND).
3. Adjust VR601 so that the voltage of J297(+B) becomes +105 ± 0.5Vdc. (CCB130AT, CCB132AT, CCB13B1, CCB134AT)
4. Adjust VR601 so that the voltage of J297(+B) becomes +114 ± 0.5Vdc. (CCB190AT, CCB192AT, CCB193AT, CCB194AT)

DC 128V (+B) Adjustment (CCB252AT, CCB255AT)

Purpose: To obtain correct operation.
Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test Point	Adjustment Point	Mode	Input
TP601(+B) TP602(GND)	VR601	—	—
Tape	**M. EQ.**	**Spec.**	
—	DC Voltmeter	+128 ± 0.5V DC	

Note: TP601(+B), TP602(GND), VR601 — Power Supply/H.V. CBA

1. Connect the unit to AC Power Outlet.
2. Connect DC Voltmeter to TP601(+B) and TP602(GND).
3. Adjust VR601 so that the voltage of TP601(+B) becomes +128 ± 0.5Vdc.

Auto AFT (VCO) Adjustment

Purpose: To operate AFT correctly.
Symptom of Misadjustment: AFT does not work correctly and/or synchronization is faulty.

Test Point	Adjustment Point	Mode	Input
—	—	VIDEO	—
Tape	**M. EQ.**	**Spec.**	
—	—	—	

1. Set the unit to the VIDEO mode with no signal input.
2. Enter the Service mode. Then press number "3" button on the remote control unit.
3. If the screen color changes to "Green" then this adjustment is finished.
4. If the screen color changes to "Red" then this adjustment is failed. Repeat steps 1 and 2 or check relative circuit or parts (IC).

TV AGC Adjustment

Purpose: Set AGC (Auto Gain Control) Level.

Symptom of Misadjustment: AGC does not synchronize correctly when RF input level is too weak and picture distortion may occur if it is too strong.

Test Point	Adjustment Point	Mode	Input
INT. MONITOR J39 (CCB132, CCB13B1, CCB134, CCB192, CCB193, CCB194) TP009/014 (CCB252, CCB255)	CH. up/down buttons	---	Color Bar 67.25MHz 60dBuV

Tape	M. EQ.	Spec.
---	Pattern Generator DC Voltmeter	+2.3 ± 0.3Vdc +2.5 ± 0.3Vdc +2.6 ± 0.3Vdc

1. Enter the Service mode. Then press number 2 button on the remote control unit.
2. Receive the Color Bar signal for channel 4 (67.25MHz). (RF Input Level: 60dBuV)

3-1. Press CH. up/down buttons so that the voltage of (INT. MONITOR -- CCB092, CCB130, CCB190) (J39 -- CCB132, CCB13B1, CCB134, CCB192, CCB193, CCB194) becomes +2.3.± 0.3V DC. (Tuner Type No. TEDH9X203A)

3-2. Press CH. up/down buttons so that the voltage of (INT. MONITOR -- CCB092, CCB130, CCB190) (J39 -- CCB132, CCB13B1, CCB134, CCB192, CCB193, CCB194) becomes +2.5.± 0.3V DC. (Tuner Type No. B8055AR)

3-3. Press CH. up/down buttons so that the voltage of (INT. MONITOR -- CCB092, CCB130, CCB190) (J39 -- CCB132, CCB13B1, CCB192, CCB193) (TP009/014 -- CCB252, CCB255) becomes +2.6.± 0.3V DC. (Tuner Type No. NJH3022U254)

3-4. Press CH. up/down buttons so that the voltage of (J39 -- CCB134AT, CCB194 becomes +2.6.± 0.3V DC. (Tuner Type No. B8045AR)

4. Turn the power off and on again.

H Adjustment

Purpose: To get correct horizontal position and size of screen image.
Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
INT. MONITOR R583 (CCB132, CCB255, CC13B1, CCB134, CCB192, CCB193, CCB194)	CH. up/down buttons	VIDEO	---

Tape	M. EQ.	Spec.
---	Frequency Counter	15.734 kHz ± 300 Hz

Note: INT. MONITOR — Main CBA
(R583 for CCB132, CCB255, CCB13B1, CCB134, CCB192, CCB193, CCB194)

1. Connect Frequency Counter to INT. MONITOR (R583 for CCB132, CCB255, CCB13B1, CCB134, CCB192, CCB193, CCB194).
2. Set the unit to the VIDEO mode and no input is necessary. Enter the Service mode.
3. Operate the unit for at least 20 minutes.
4. Press "2" button on the remote control unit and select H-Adj Mode. (Press "2" button, then display will change H-Adj and AGC.)
5. Press CH up / down buttons on the remote control unit so that the display will change "0" to "7." At this moment, choose display "0" to "7" when the Frequency counter display is closest to 15.734kHz ± 300Hz.
6. Turn the power off and on again.

C-Trap Adjustment (CCB130AT, CCB132, CCB190AT, CC13B1, CCB134, CCB192, CCB193, & CCB194)

Purpose: To get minimum leakage of the color signal carrier.
Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

	Adjustment Point	Mode	Input
J291 (B-Out)	CH. up/down buttons	---	Color Bar
Tape	**M. EQ.**	**Spec.**	
---	Oscilloscope	200 mVp-p	

Note: J291 (B-Out) --- Main CBA

1. Connect Oscilloscope to J291.
2. Input a color bar signal from RF input. Enter the Service mode.
3. Press "0" button on the remote control unit and select C-TRAP Mode.
4. Press CH up/down buttons on the remote control unit so that the carrier leakage B-Out (3.58MHz) value becomes 200 mVp-p on the oscilloscope.
5. Turn the power off and on again.

C-Trap Adjustment (CCB092AT, CCB252, CCB255)

Purpose: To get minimum leakage of the color signal carrier.
Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

Test Point	Adjustment Point	Mode	Input
TP017(B-Out)	CH up/down buttons	---	Color Bar
Tape		**Spec.**	
---	Oscilloscope	200mV P-P	

Note: TP017 (B-Out)— Main CBA

1. Connect Oscilloscope to TP017.

2. Input a color bar signal from RF input. Enter the Service mode.
3. Press "0" button on the remote control unit and select C-TRAP Mode.
4. Press CH up/down buttons on the remote control unit so that the carrier leakage B-Out (3.58MHz) value becomes 200mVp-p on the oscilloscope.
5. Turn the power off and on again.

V. Size Adjustment

Purpose: To obtain correct vertical height of screen image.
Symptom of Misadjustment: If V. Size is incorrect, vertical height of image on the screen may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
—	CH up/down buttons	—	Monoscope
Tape	**M. EQ.**	**Spec.**	
—	Pattern Generator	90±5%	

Note:
1. Enter the Service mode. Press "9" button on the remote control unit and select V-S Mode. (Press "9" button then display will change to V-P and V-S).
2. Input monoscope pattern.
3. Press CH up/down buttons on the remote control unit so that the monoscope pattern is 90 ± 5% of display size and the circle is round.

V. Shift Adjustment

Purpose: To obtain correct vertical position of screen image.
Symptom of Misadjustment: If V. position is incorrect, vertical position of image on the screen may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
---	CH. up/down buttons	---	Monoscope
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	90 ± 5%	

Note:
1. Enter the Service mode. Press "9" button on the remote control unit and select V-P Mode. (Press "9" button then display will change to V-P and V-S).
2. Input monoscope pattern.
3. Press CH up/down buttons on the remote control unit so that the top and bottom of the monoscope pattern are equal to each other.

H. Shift Adjustment

Purpose: To obtain correct horizontal position and size of screen image.
Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
---	CH. up/down buttons	---	Monoscope
Tape	**M. EQ.**	**Spec.**	

---	Pattern Generator	90 ± 5%

Note:
1. Enter the Service mode. Press "8" button on the remote control unit and select H-P Mode.
2. Input monoscope pattern.
3. Press CH up/down buttons on the remote control unit so that the left and right side of the monoscope pattern are equal to each other.
4. Turn the power off and on again.

Cut-off Adjustment

Purpose: To adjust the beam current of R, G, B, and screen voltage.
Symptom of Misadjustment: White color may be reddish, greenish or bluish.

Test Point	Adjustment Point	Mode	Input
---	Screen-Control	Ext.	Black Raster/ White Raster
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See Reference Notes Below	

Note: Screen Control FBT — H/V CBA
F.B.T = Flyback Transformer
Use the Remote Control Unit

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Set the screen control to minimum position. Input the Black raster signal from RF input.
3. Enter the Service Mode. Dimmed horizontal line appears on the CRT.
4. Press the "VOL up/down" button. (Press "VOL up/down" then display will change CUT OFF/DRIVE, VCO adjustment, Analog OSD adjustment).
5. Choose CUT OFF/DRIVE Mode then press "1" button. This adjustment mode is CUT OFF (R).
6. Press the "CH up/down" button until the horizontal line becomes white.
7. Choose CUT OFF/DRIVE mode then press "2" button. This adjustment mode is CUT OFF (G). Press "CH up/down" until the horizontal line becomes white.
8. Choose CUT OFF/DRIVE Mode then press "3" button. This adjustment mode is CUT OFF (B). Press "CH up/down" until the horizontal line becomes white.
9. Input the White Raster Signal from Video In.
10. Choose CUT OFF/DRIVE mode then press "4." Adjust the RED DRIVE as needed with the CH up/down buttons.
11. Choose CUT OFF/DRIVE mode then press "5." Adjust the BLUE DRIVE as needed with the CH up/down buttons.
12. Turn the power off and on again.

Sub-Brightness Adjustment

Purpose: To get proper brightness.
Symptom of Misadjustment: If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Brightness Control.

Test Point	Adjustment Point	Mode	Input

---	CH up/down buttons	---	SYMPTE 7.5 IRE

Tape	M. EQ.	Spec.
---	Pattern Generator	**See Below**

Note: SYMPTE Setup level — 7 IRE
1. Enter the Service Mode. Then input SYMPTE signal from RF input.
2. Press MENU button. (Press MENU button then display will change B R T, C N T, T N T, V-T and SHP). Select BRT and press CH up/down buttons so that the bar is just visible (See above figure).
3. Turn the power off and on again.

Focus Adjustment

Purpose: Set the optimum Focus.
Symptom of Misadjustment: If Focus Adjustment is incorrect, blurred images are shown on the display.

Test Point	Adjustment Point	Mode	Input
---	Focus Control	---	Monoscope
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	See Below	

Note: Focus VR (FBT) --- H/V CBA
FBT = Flyback Transformer

1. Operate the unit more than 30 minutes
2. Face the unit to the East and degauss the CRT using a Degaussing Coil.
3. Input the monoscope pattern.
4. Adjust the Focus Control on the FBT to obtain clear picture.

Head Switching Position Adjustment

Purpose: Determine the Head Switching Point during Playback.
Symptom of Misadjustment: May cause Head Switching Noise or Vertical Jitter in the picture.

Note: Unit reads Head Switching Position automatically and displays it on the screen (Upper Left Corner).

1. Playback test tape (VFMS0001H6).
2. Enter the Service Mode. Then press the number 5 button on the remote control unit.
3. The Head Switching position will display on the screen; if adjustment is necessary follow step 4. 6.5H(412.7us) is preferable.
4. Press "CH up" or "CH down" button on the remote control unit if necessary. The value will be changed in 0.5H steps up or down. Adjustable range is up to 9.5H. If the value is beyond adjustable range, the display will change as:
   Lower out of range; 0.0H
   Upper out of range; -.-H
5. Turn the power off and on again.

SIF Adjustment

Purpose: To set the SIF (Sound Intermediate Frequency).
Symptom of Misadjustment: Audio may not sound correctly.

Note: This adjustment automatically done by the chrominance IC (IC301).

CCS Text Box Location

When replacing the CRT, the CCS Box might not stay in appropriate position. Then, replace microcomputer.

Note: This adjustment automatically done by the microcomputer.

The following two adjustments normally are not attempted in the field. They should be done only when replacing the CRT then adjust as a preparation.

Purity Adjustment

Purpose: To obtain pure color.
Symptom of Misadjustment: If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
---	Deflection Yoke Purity Magnet	---	Red Color
Tape	**M. EQ.**	**Spec.**	
---	Pattern Generator	**See Below**	

1. Set the unit facing east.
2. Operate the unit for over 30 minutes before adjusting.
3. Fully degauss the unit using an external degaussing coil.
4. Set the unit to the AUX Mode which is located before CH2 then input a red raster from video in.
5. Loosen the screw on the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen. (See **Fig. 6**)
6. Loosen the Ring Lock and adjust the Purity Magnets so that a red field is obtained at the center of the screen. Tighten Ring Lock. (See **Fig. 5**, **6**)
7. Slowly push the Deflection Yoke toward the bell of the CRT and set it where a uniform red field is obtained.
8. Tighten the clamp screw on the Deflection Yoke.

Convergence Adjustment

Purpose: To obtain proper convergence of red, green and blue beams.
Symptom of Misadjustment: If Convergence Adjustment is incorrect, the edge of white letters may have color edges.

Test Point	Adjustment Point	Mode	Input
---	C.P. Magnet (RB), C.P. Magnet (RB-G), Deflection Yoke	---	Dot Pattern or Crosshatch

Tape	M. EQ.	Spec.
---	Pattern Generator	**See Below**

1. Set the unit to the AUX Mode which is located before CH2 then input a Dot or crosshatch pattern.
2. Loosen the Ring Lock and align red with blue dots or Crosshatch at the center of the screen by rotating (RB) C.P. Magnets. (See **Fig. 7**)
3. Align red / blue with green dots at the center of the screen by rotating (RB-G) C.P. Magnet. (See **Fig. 8**)
4. Fix the C.P. Magnets by tightening the Ring Lock.
5. Remove the DY Wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
6. Fix the Deflection Yoke by carefully inserting the DY Wedges between CRT and Deflection Yoke.

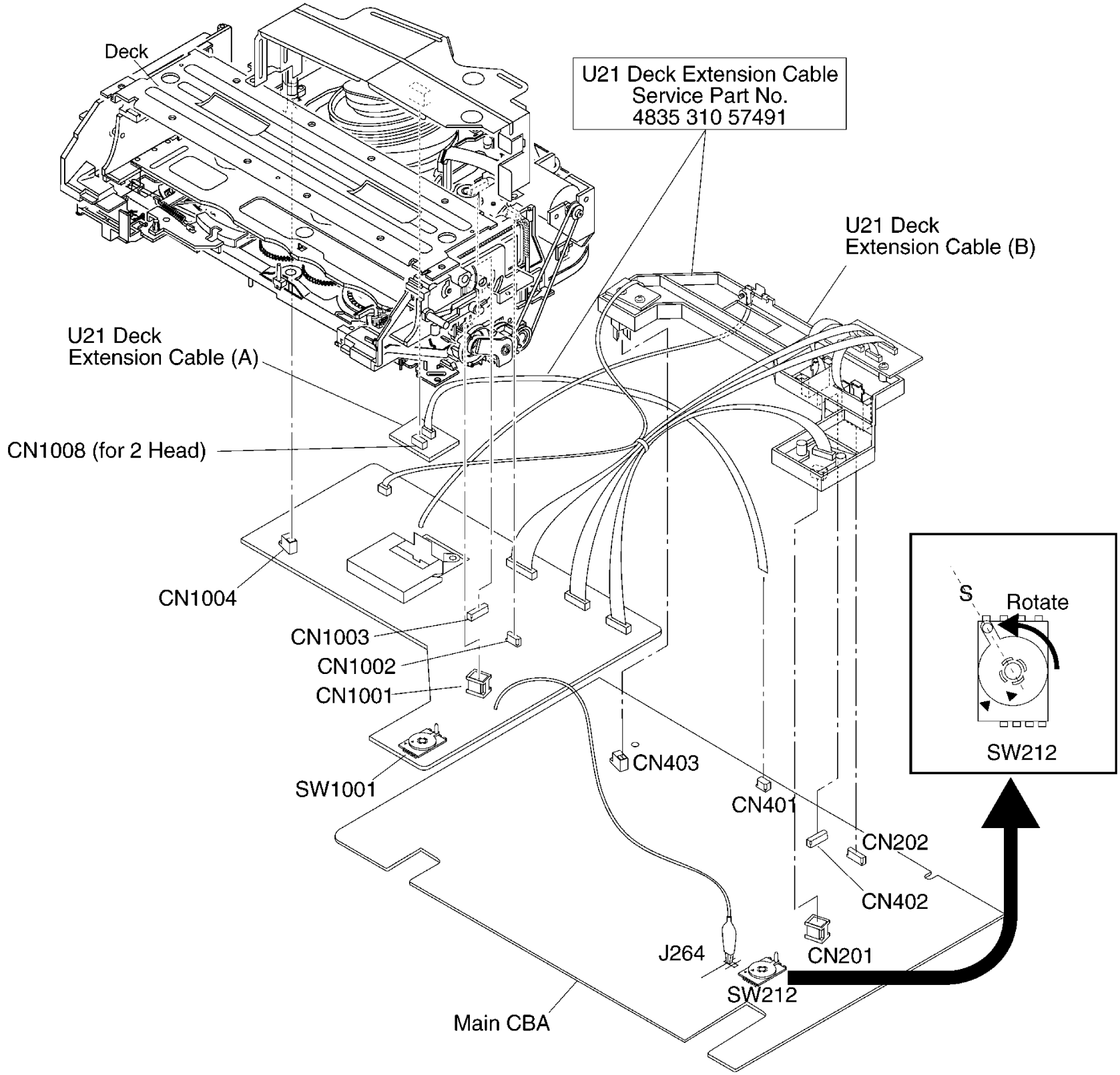
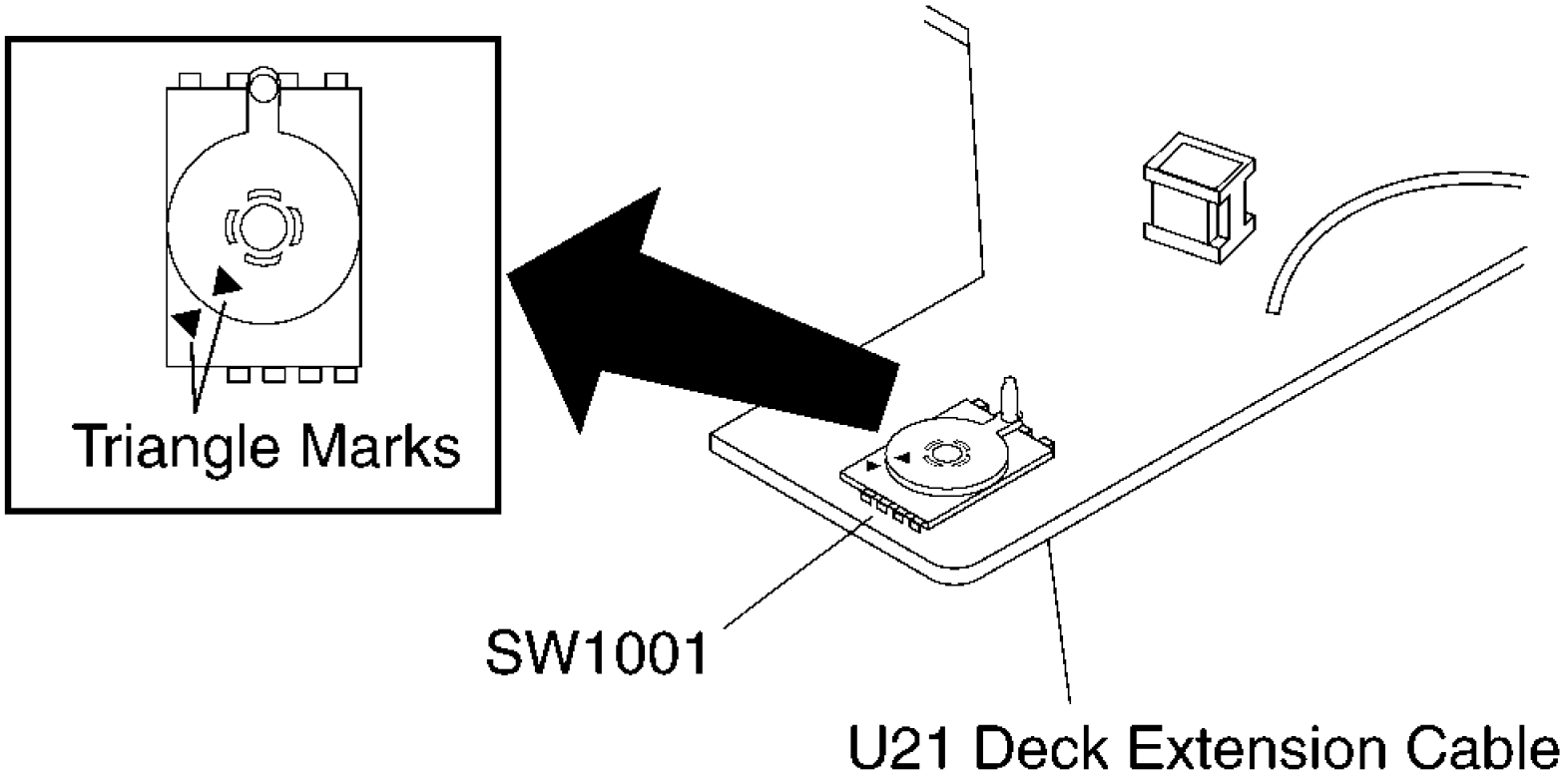
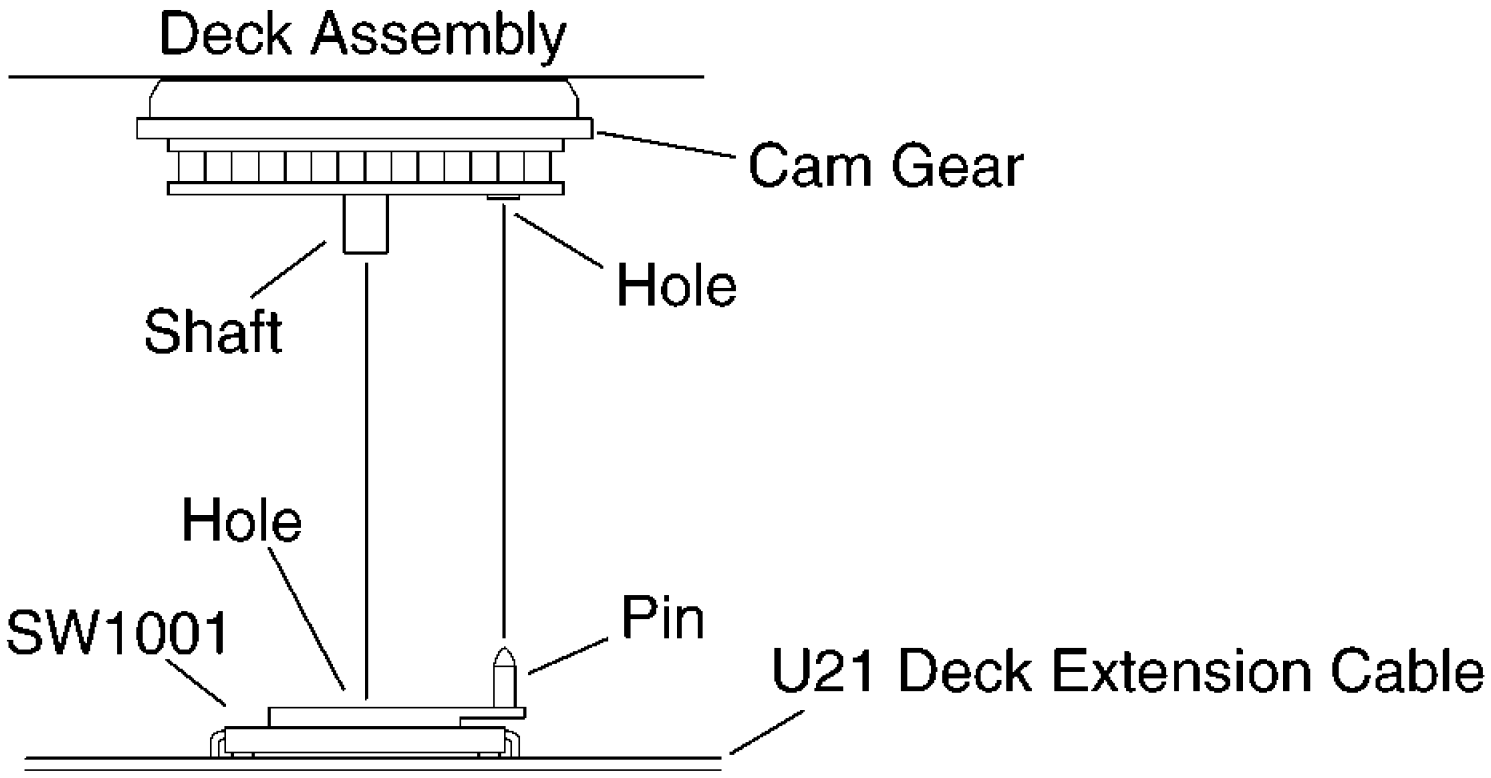
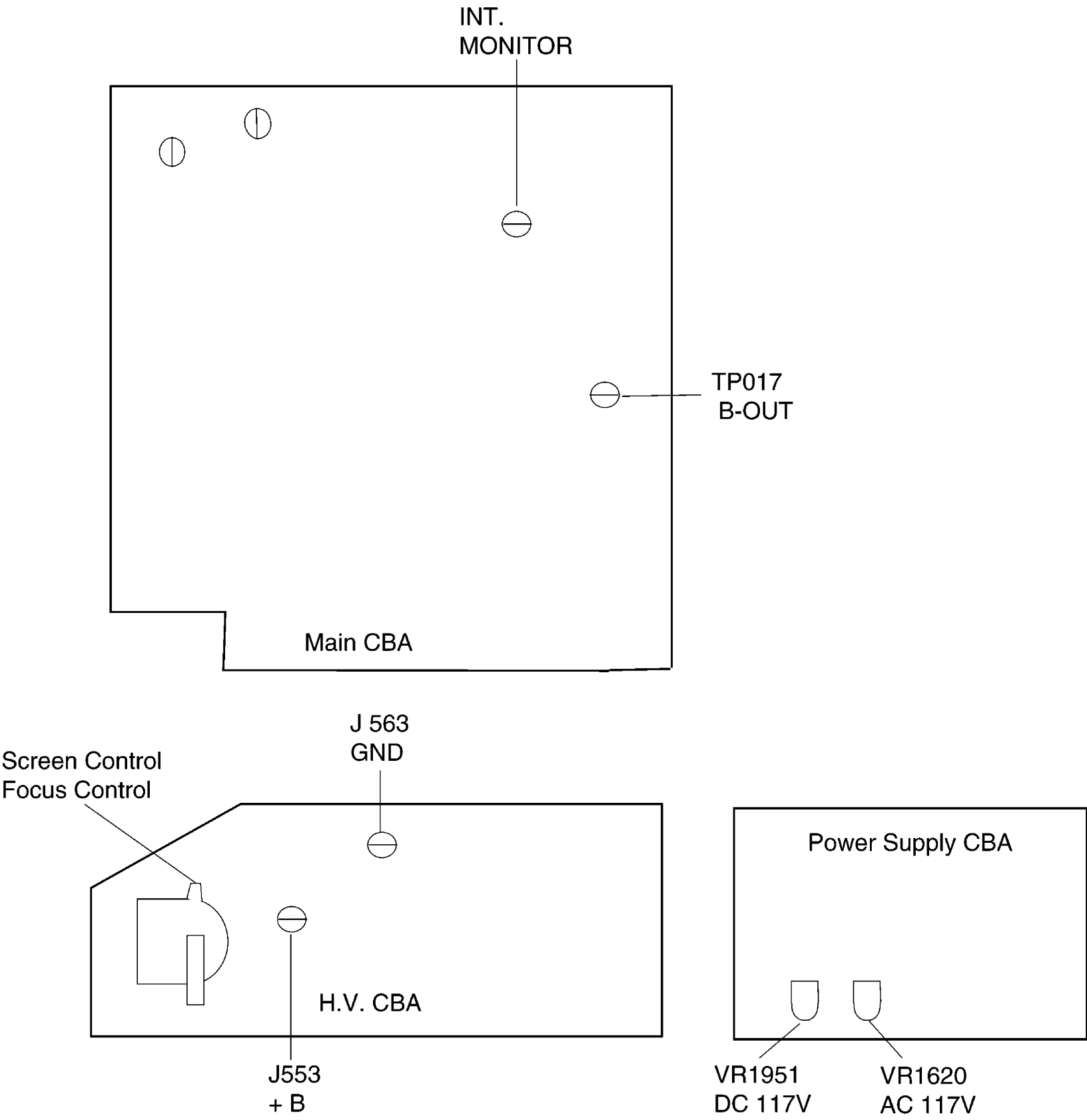

Deck
U21 Deck Extension Cable
Service Part No.
4835 310 57491
U21 Deck
Extension Cable (B)
U21 Deck
Extension Cable (A)
CN1008 (for 2 Head)
CN1004
CN1003
CN1002
CN1001
SW1001
CN403
CN401
CN202
CN402
J264
CN201
SW212
Main CBA
S
Rotate
SW212

Fig. 1

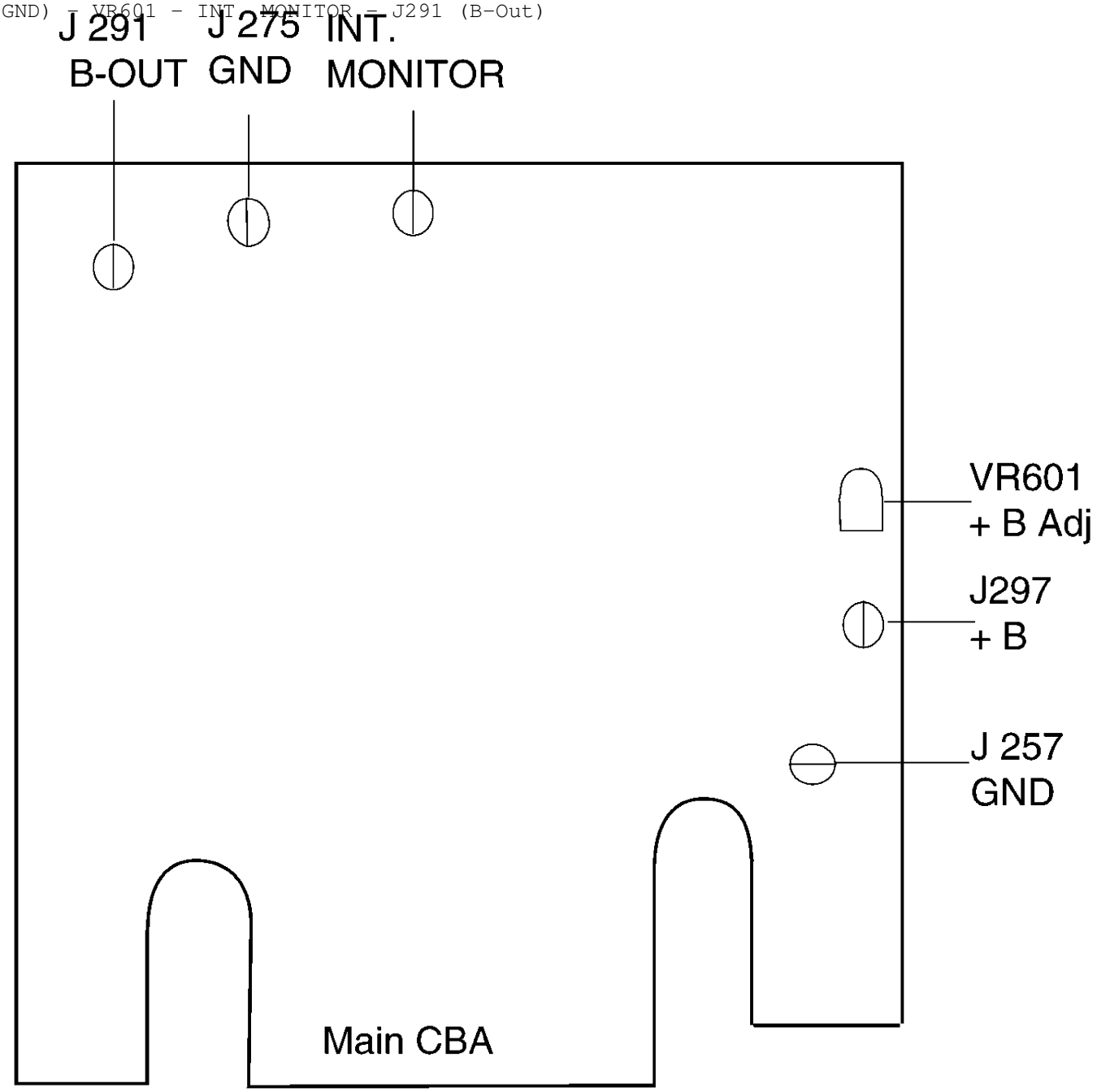
Fig.2

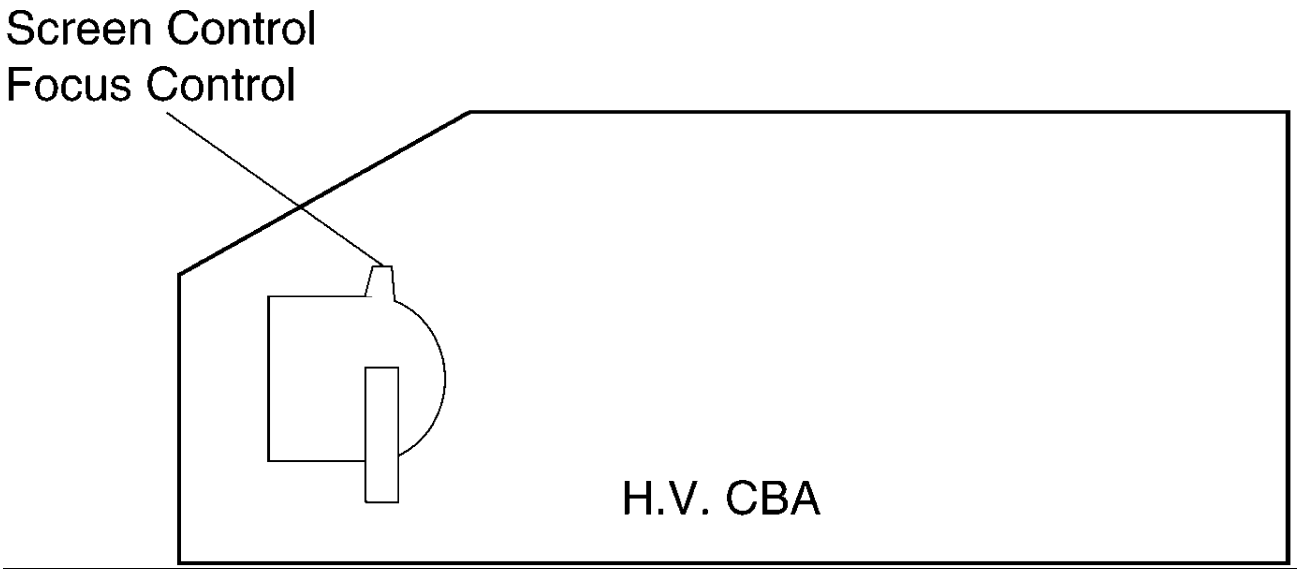

Triangle Marks
SW1001
U21 Deck Extension Cable


Deck Assembly
Cam Gear
Hole
Shaft
Hole
SW1001
Pin
U21 Deck Extension Cable

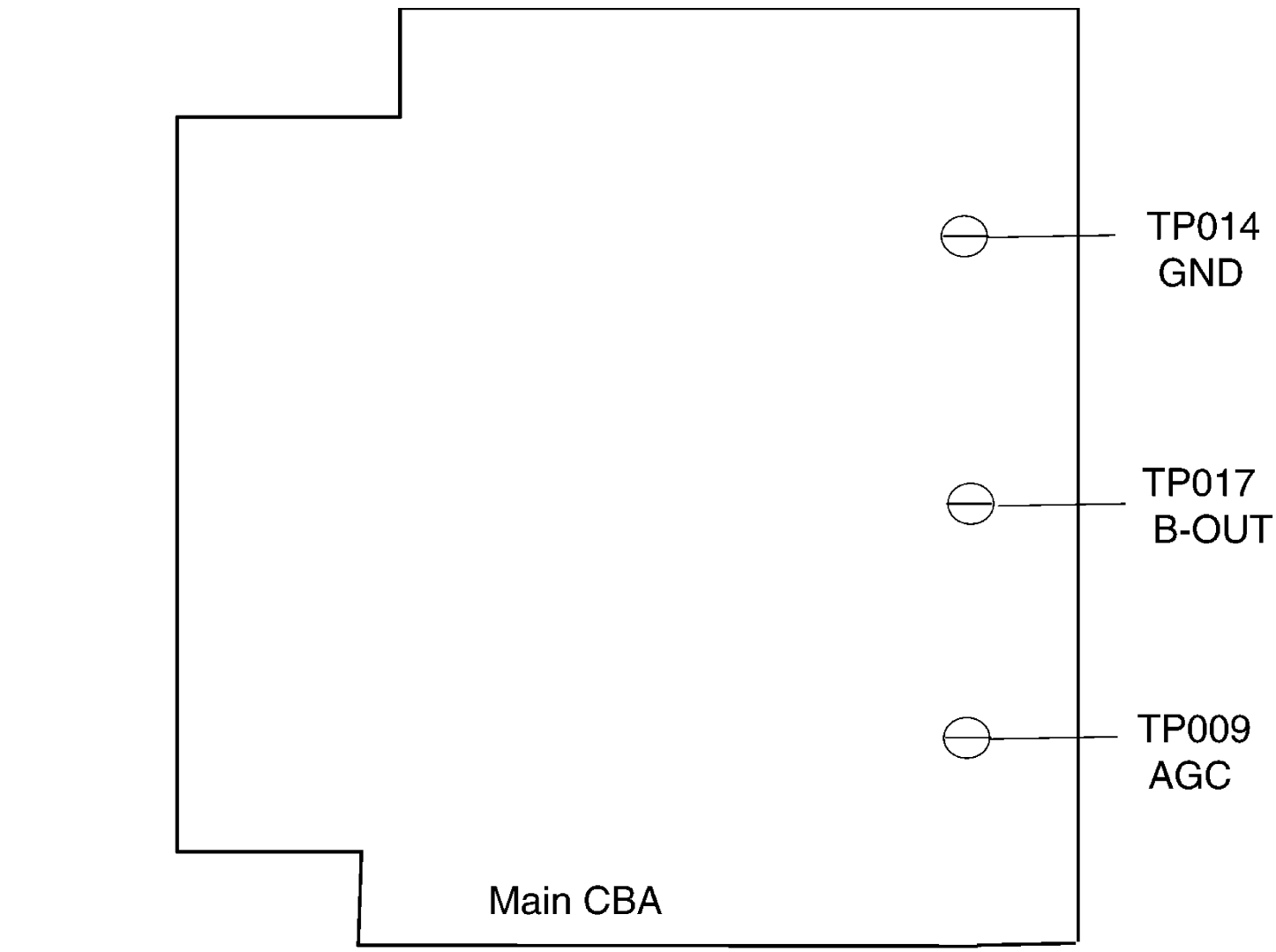

INT.
MONITOR
TP017
B-OUT
Main CBA
J 563
GND
Screen Control
Focus Control
H.V. CBA
J553
+ B
Power Supply CBA
VR1951
DC 117V
VR1620
AC 117V

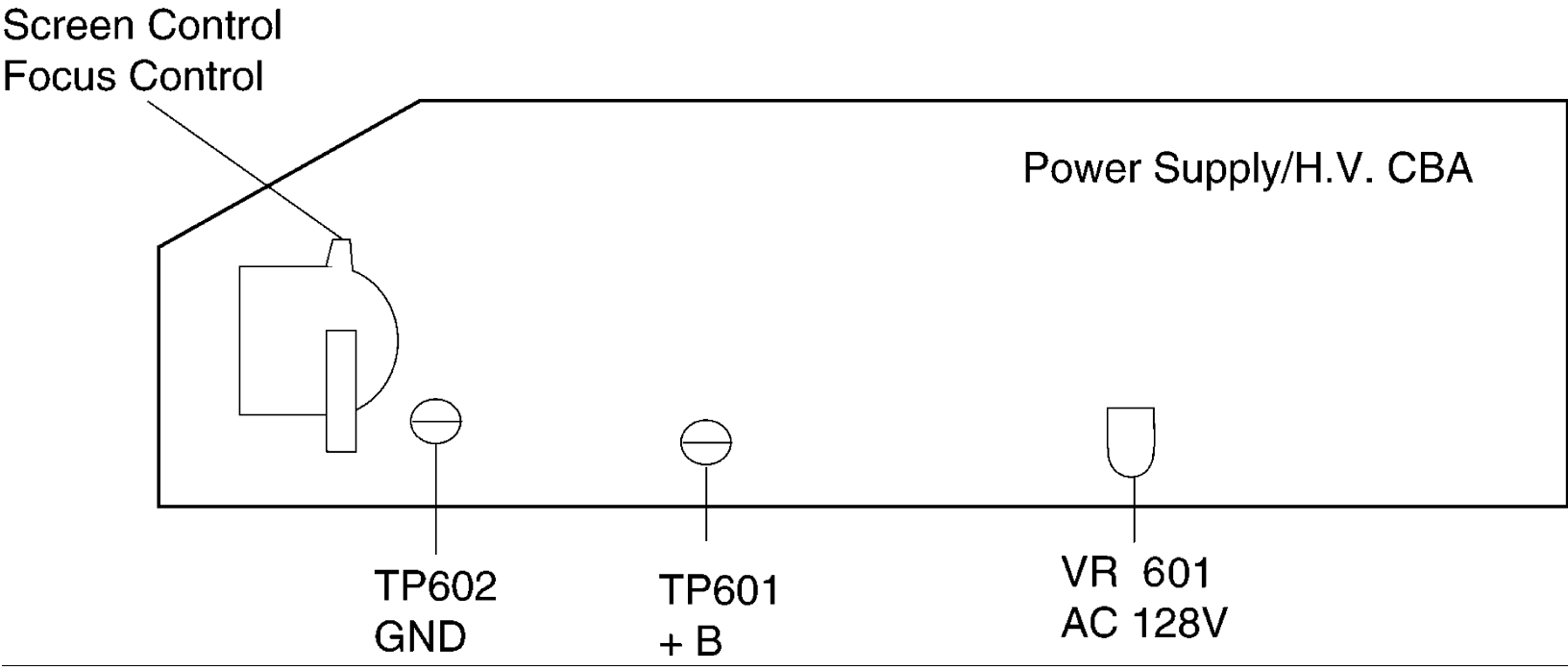
J297 (+B)J257 (GND) - VR601 - INT. MONITOR - J291 (B-Out)



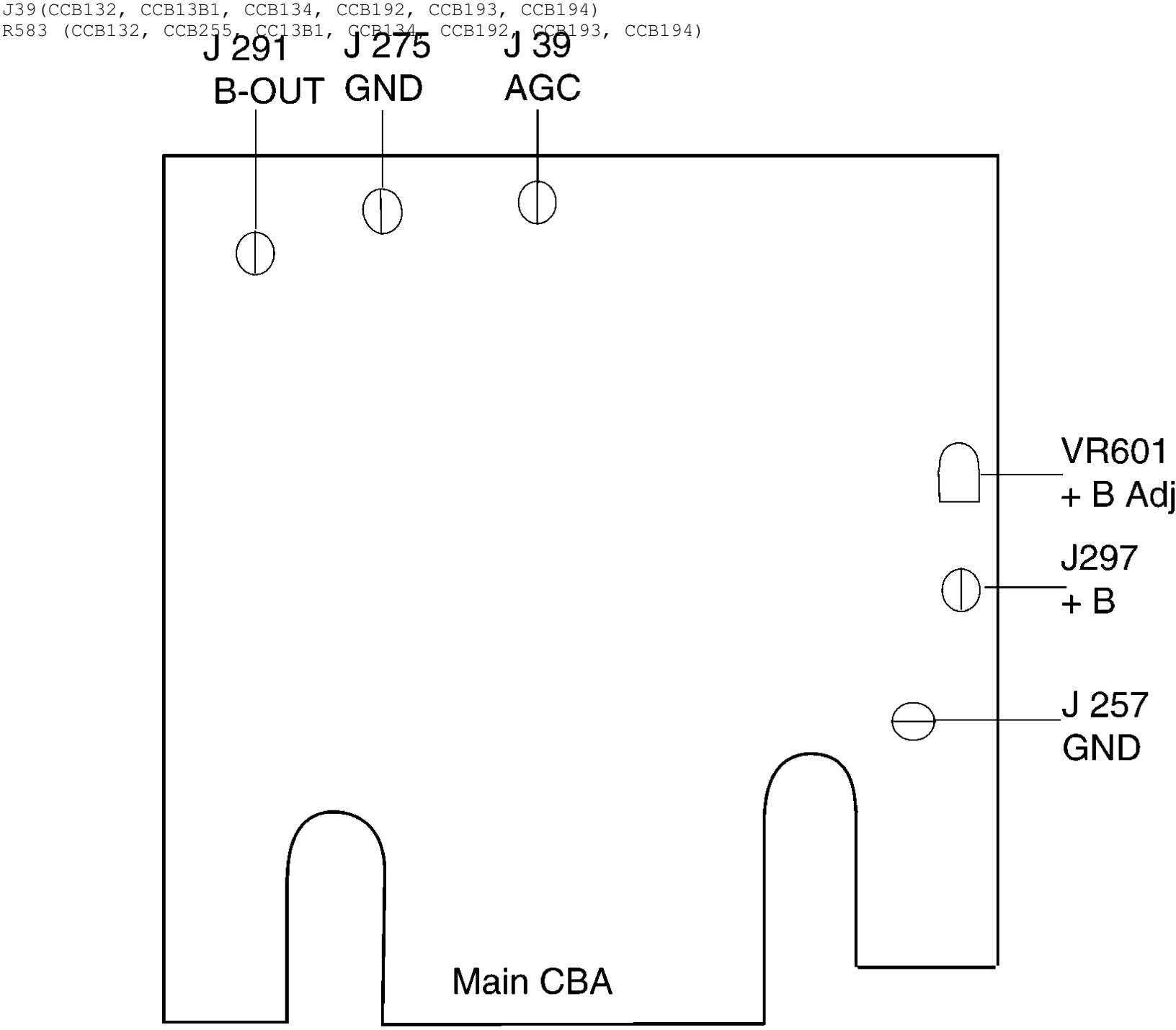


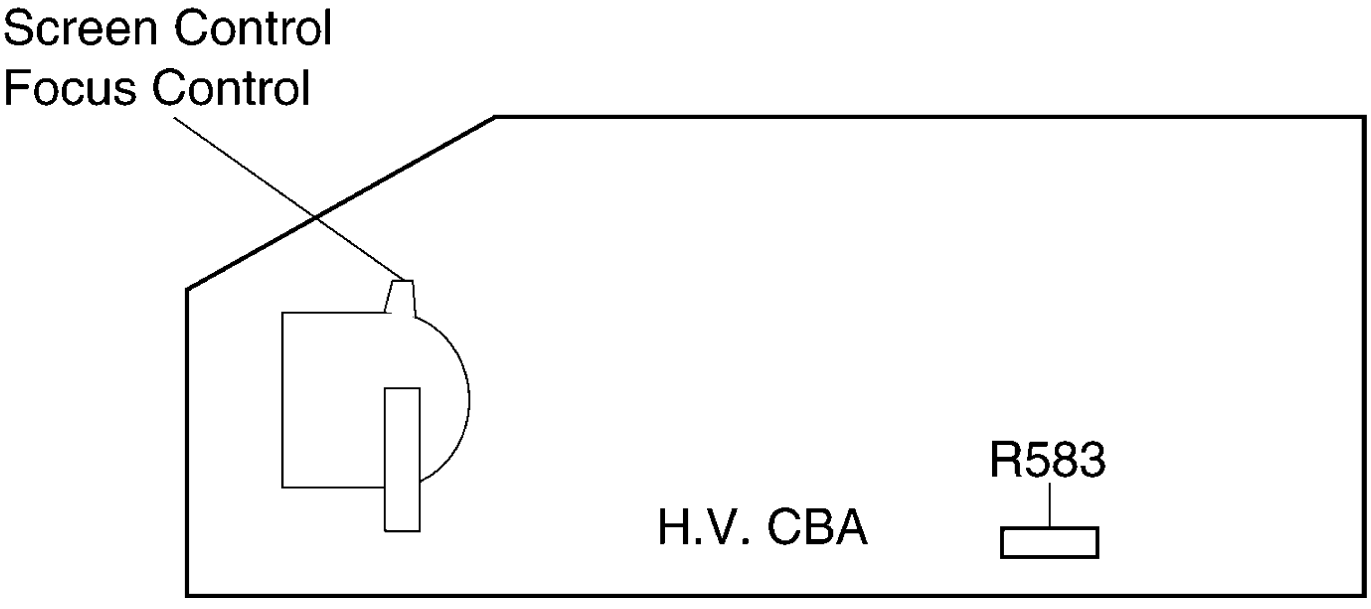
TP601(+B) – TP602(GND) – VR601 – TP009/014 (CCB252, CCB255)

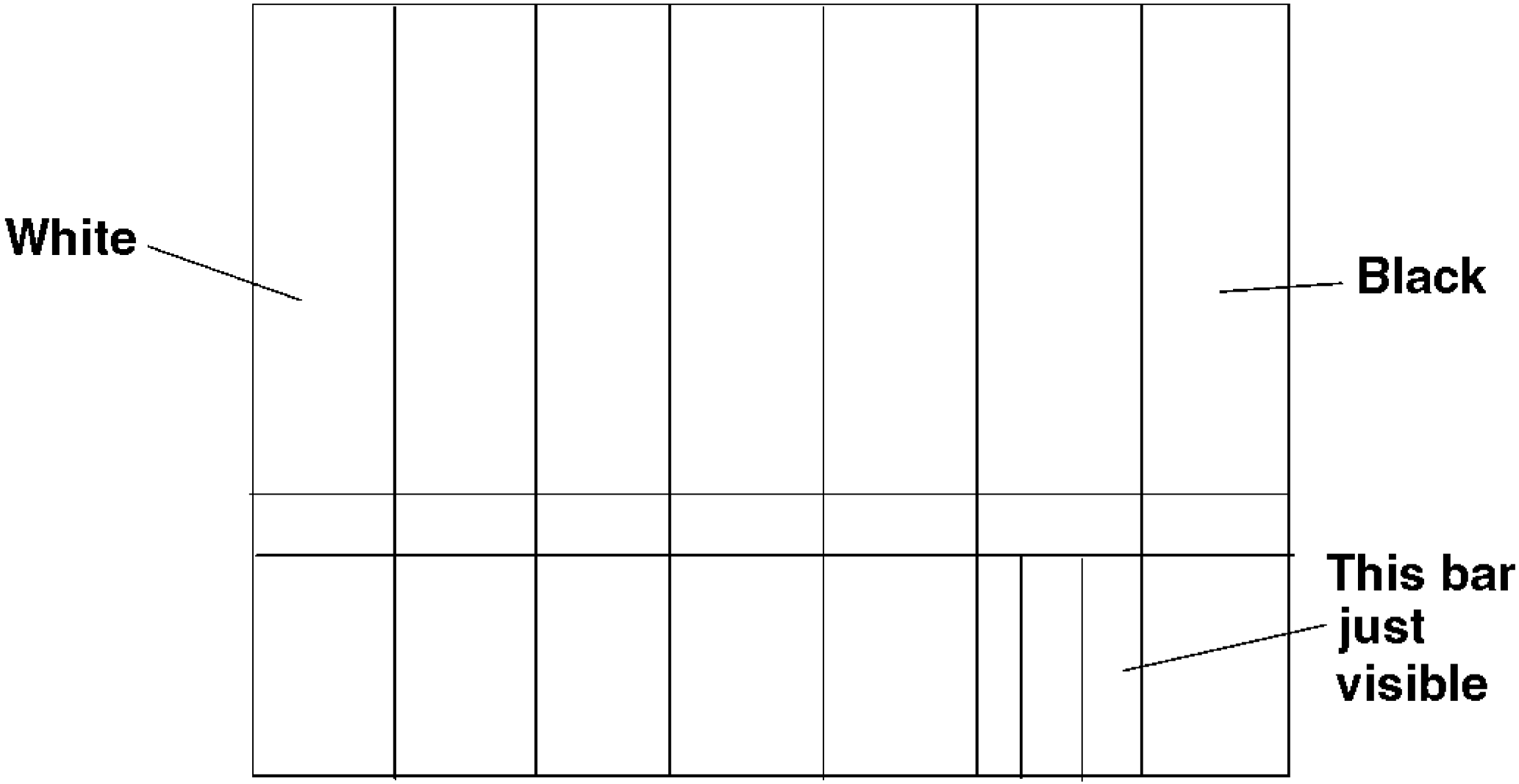




J39(CCB132, CCB13B1, CCB134, CCB192, CCB193, CCB194)
R583 (CCB132, CCB255, CC13B1, CCB134, CCB192, CCB193, CCB194)







See Below

See Below - Fig. 5

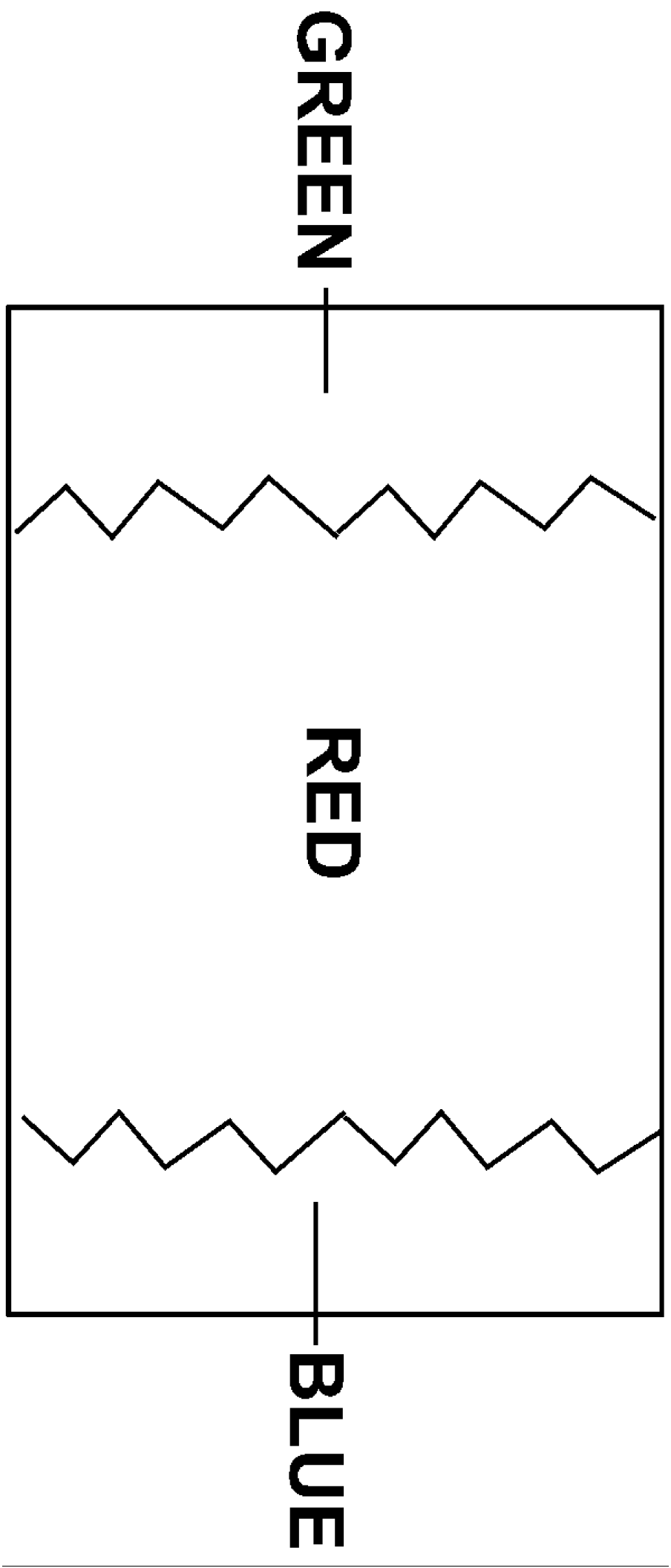


Fig. 6 - 6 - See Below - Fig. 7 Fig. 8

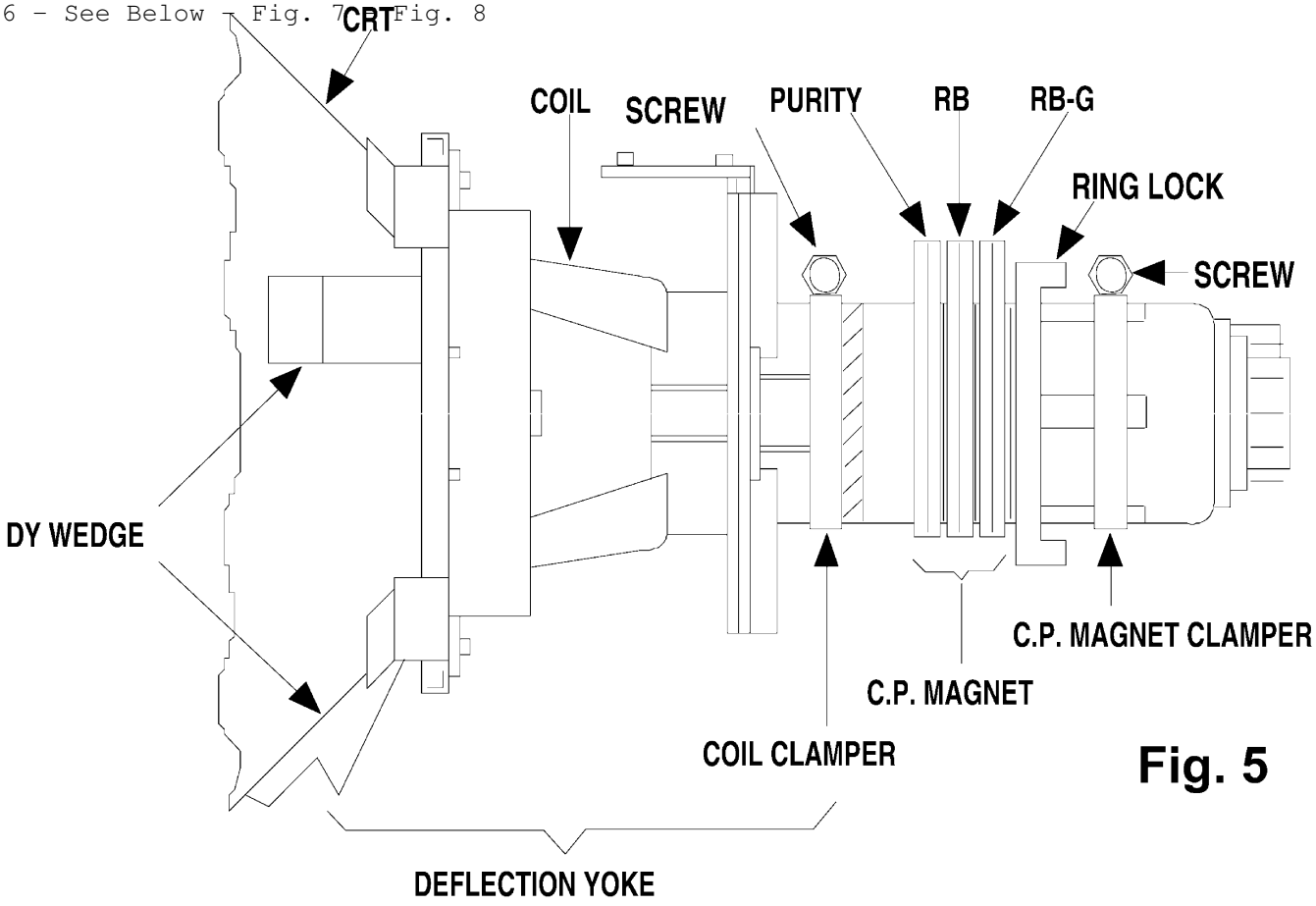


Fig. 5

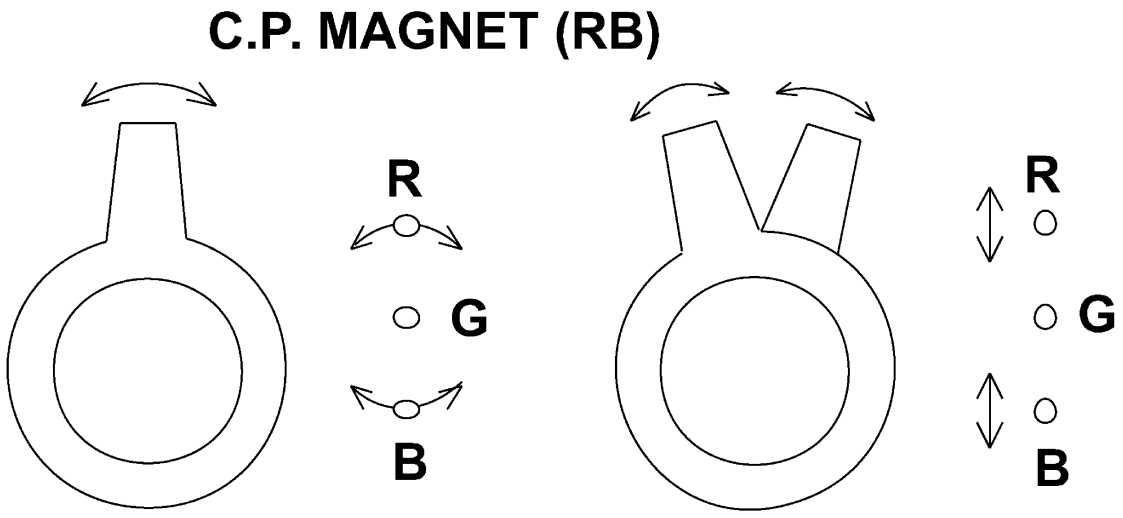


Fig. 6

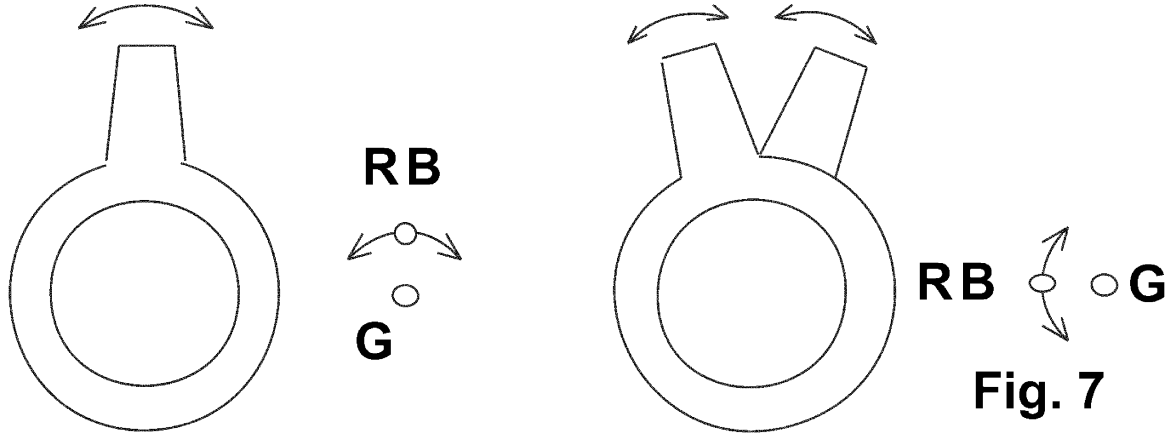


Fig. 7

Philips Consumer Electronics

Technical Service Data

Service and Quality
Service Publications Dept.
One Philips Drive
P.O. Box 14810
Knoxville, TN 37914

Manual 5871
Model no.: CCB130AT01
First Publish: 4-25-2000
Rev. Date: 9-27-2000
Print Date: 3/16/05

Training Information

REFER TO SAFETY GUIDELINES

SAFETY NOTICE: ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

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BLOCK DIAGRAMS

MODEL CCB092AT

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODELS CCB130AT & CCB190AT

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB252

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB132

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB255

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CC13B1

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB134

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB192

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB193

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

MODEL CCB194

SERVO/SYSTEM CONTROL BLOCK DIAGRAM

VIDEO BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

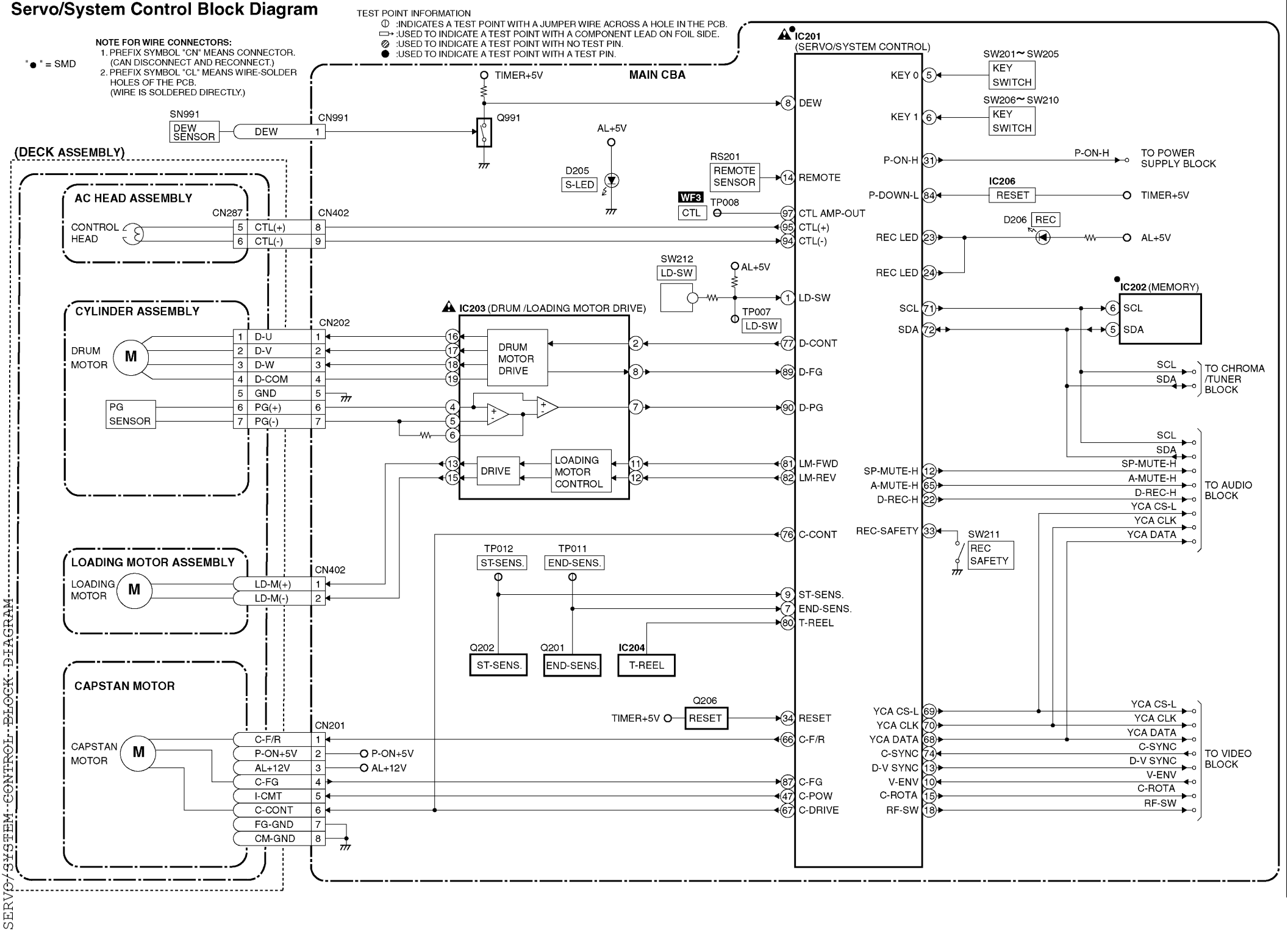
CHROMA/TUNER BLOCK DIAGRAM

CRT/H.V. BLOCK DIAGRAM

POWER SUPPLY BLOCK DIAGRAM

BLOCK DIAGRAMS

Servo/System Control Block Diagram



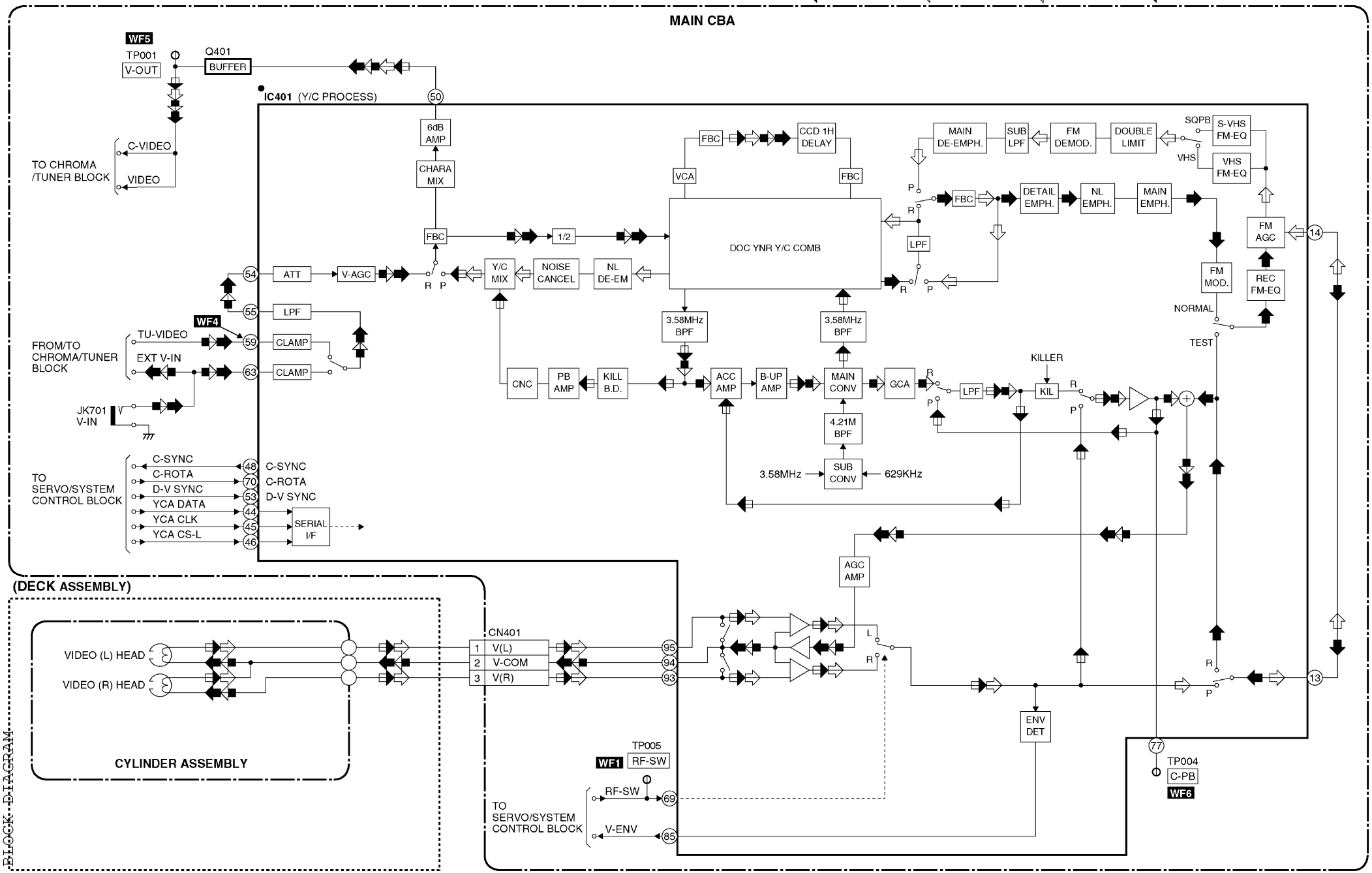
Video Block Diagram

"● " = SMD

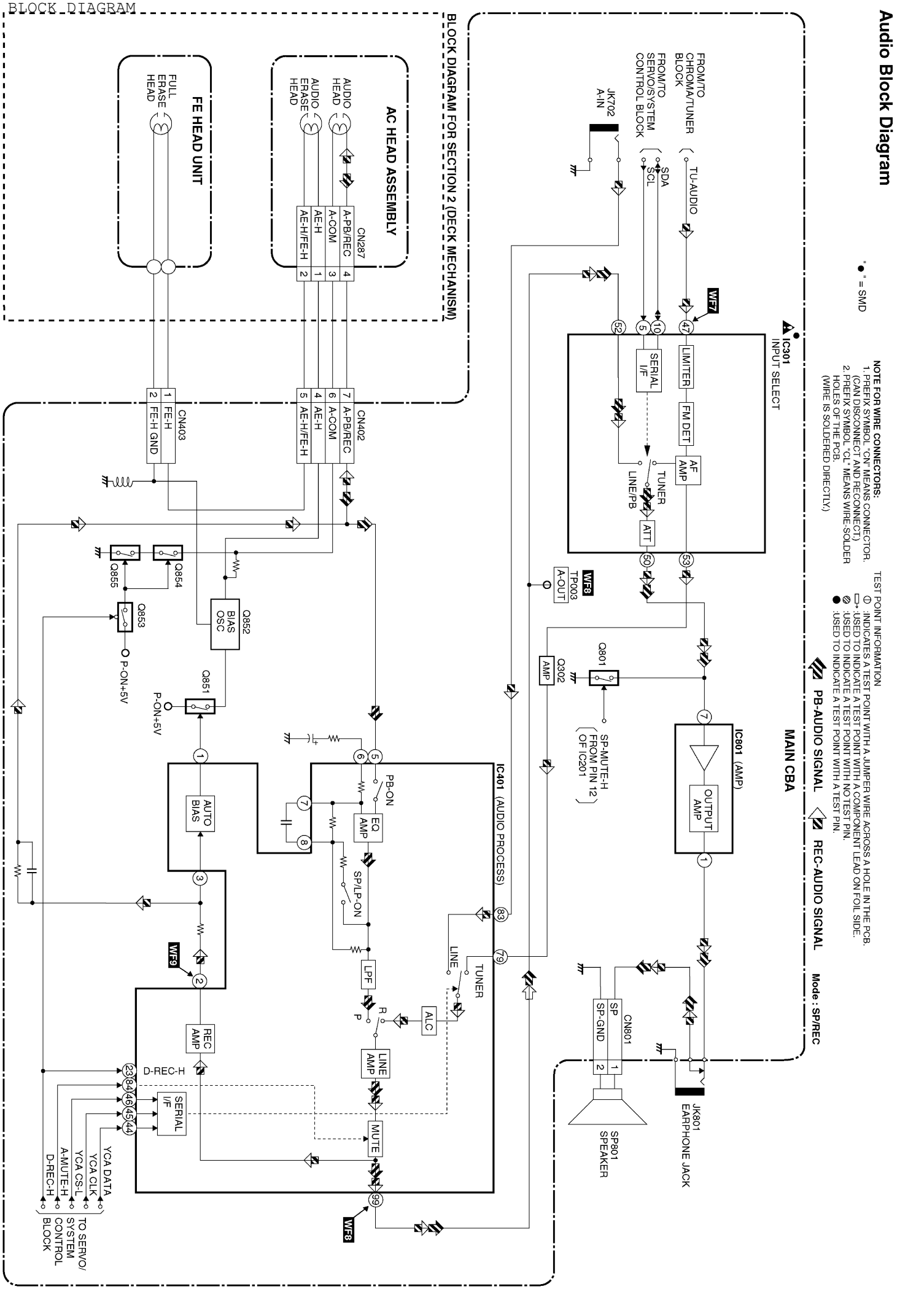
NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

TEST POINT INFORMATION
- Ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

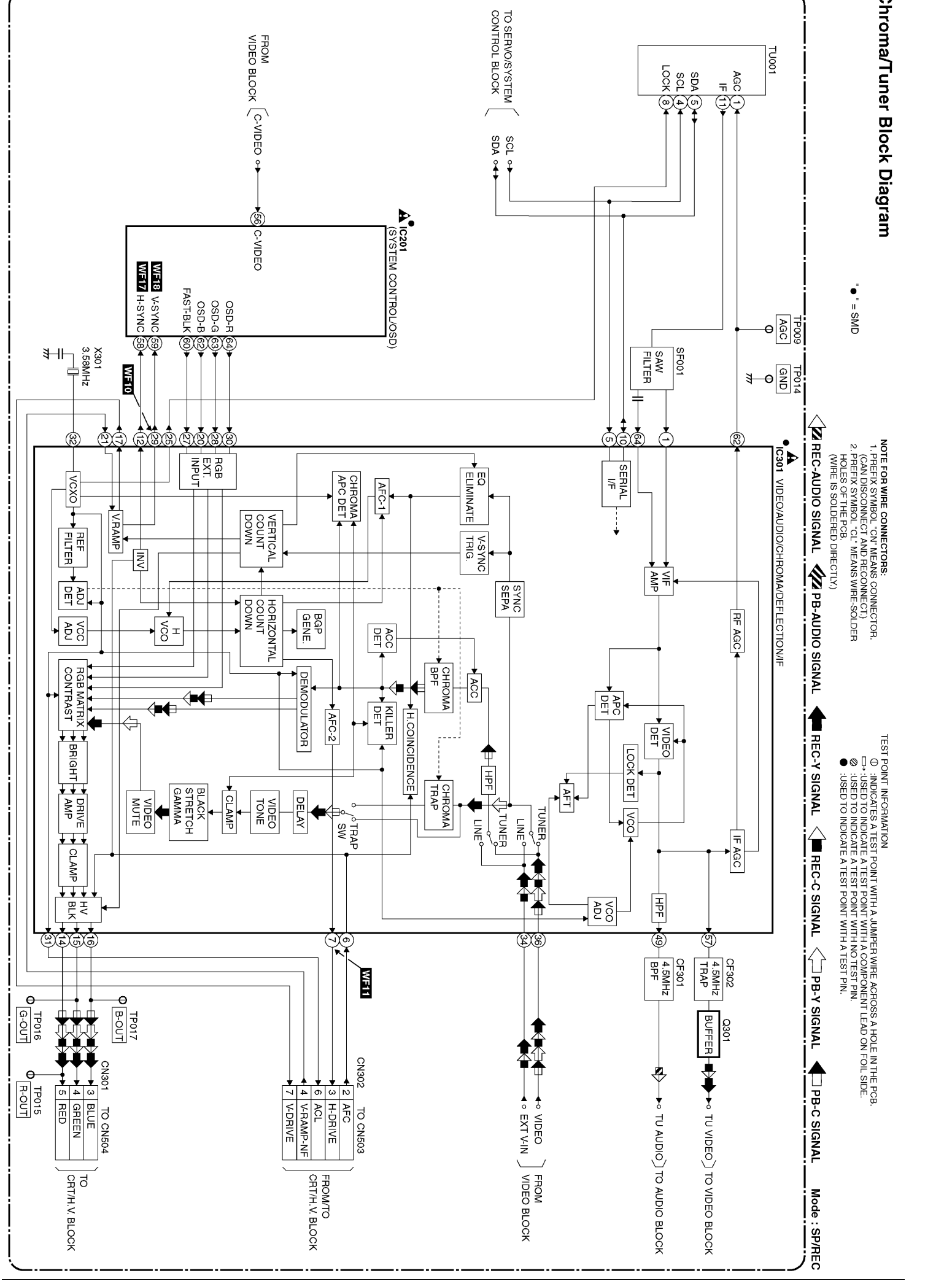
REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC



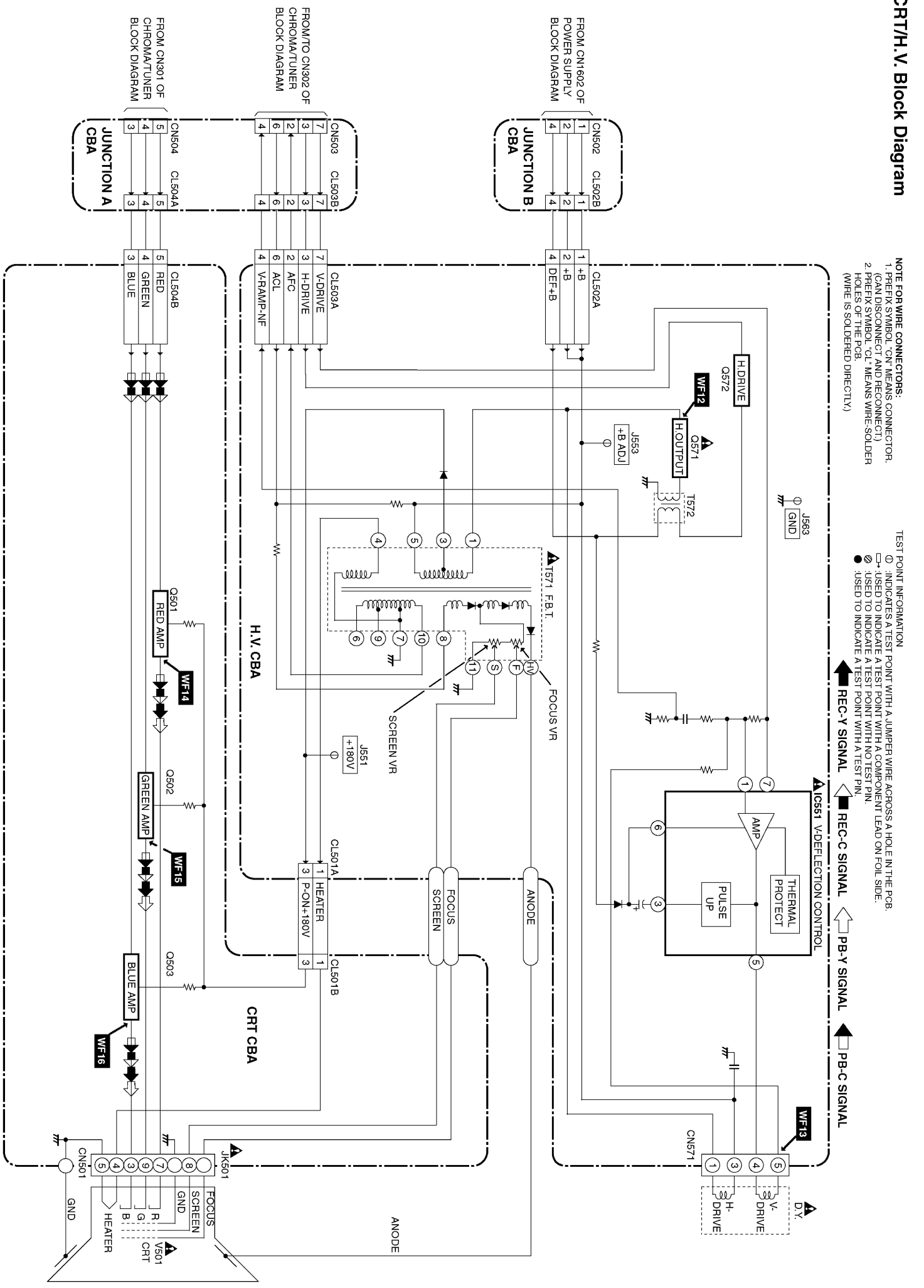
Audio Block Diagram



Chroma/Tuner Block Diagram



CRT/H.V. Block Diagram



Power Supply Block Diagram

Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F1601, F1951) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC(DC) plug to the AC(DC) power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

4A 125V

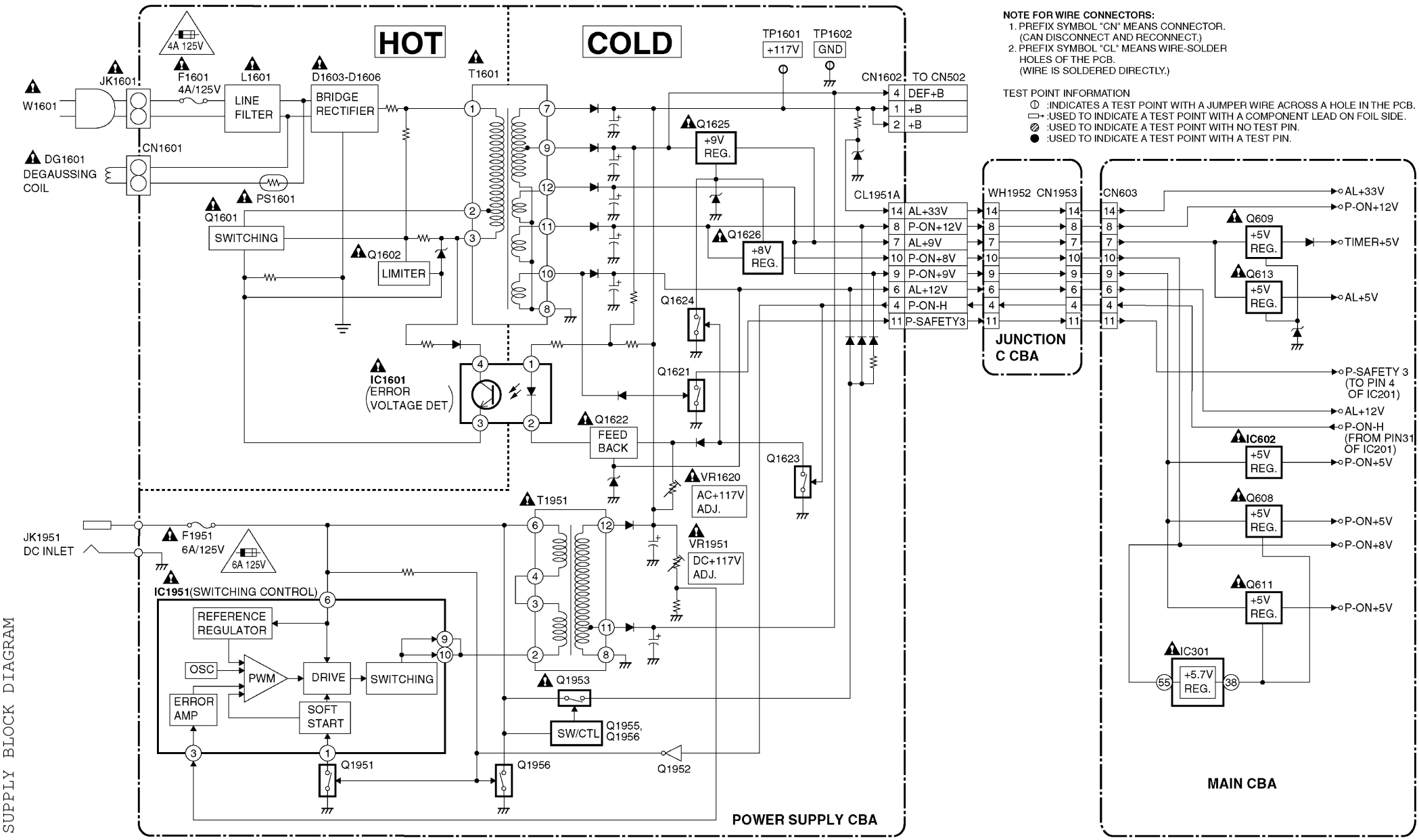
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

6A 125V

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

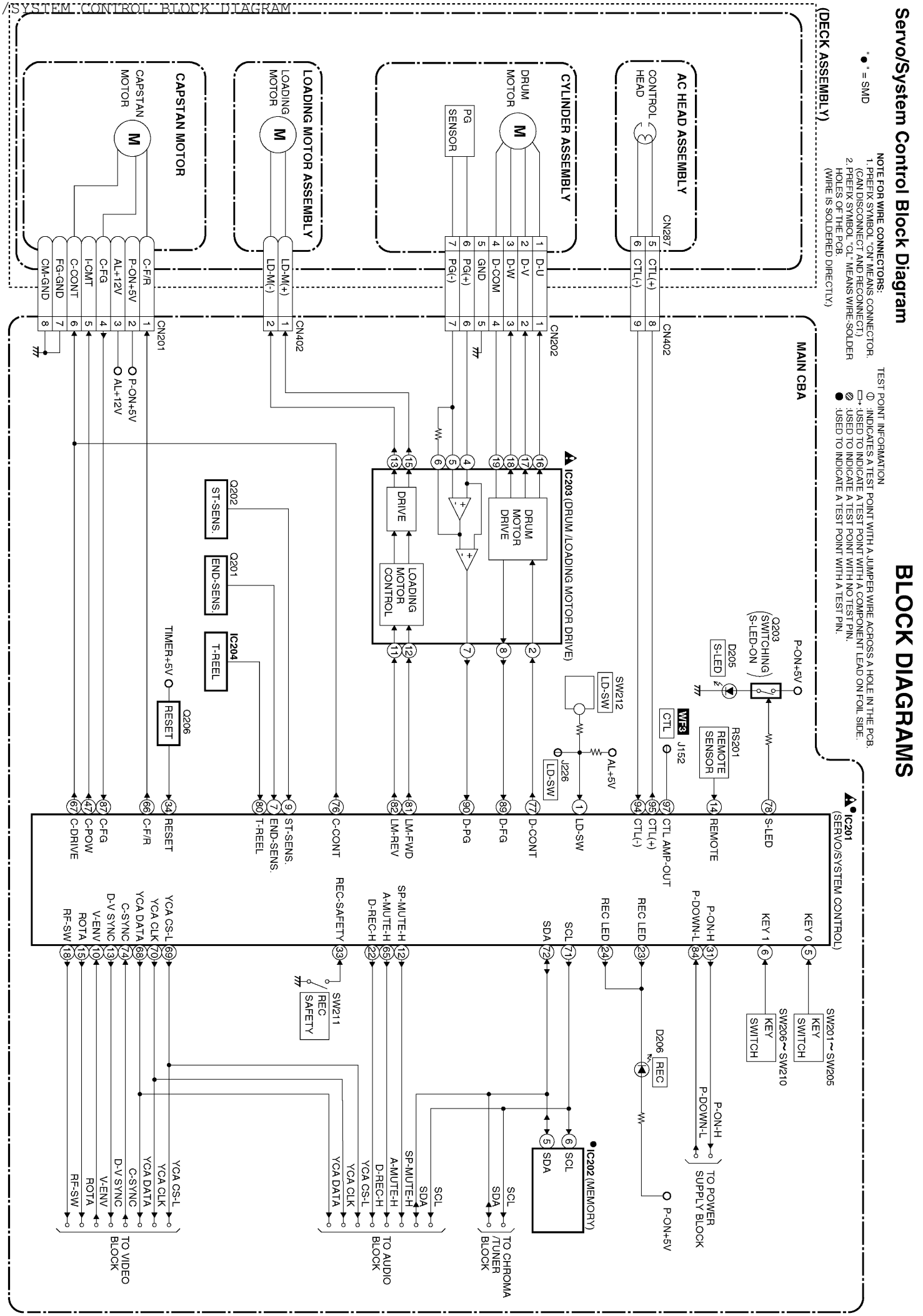
TEST POINT INFORMATION
Ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
● :USED TO INDICATE A TEST POINT WITH A TEST PIN.



POWER SUPPLY BLOCK DIAGRAM

Servo/System Control Block Diagram

BLOCK DIAGRAMS



Video Block Diagram

NOTE FOR WIRE CONNECTORS:
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2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

"● " = SMD

TEST POINT INFORMATION
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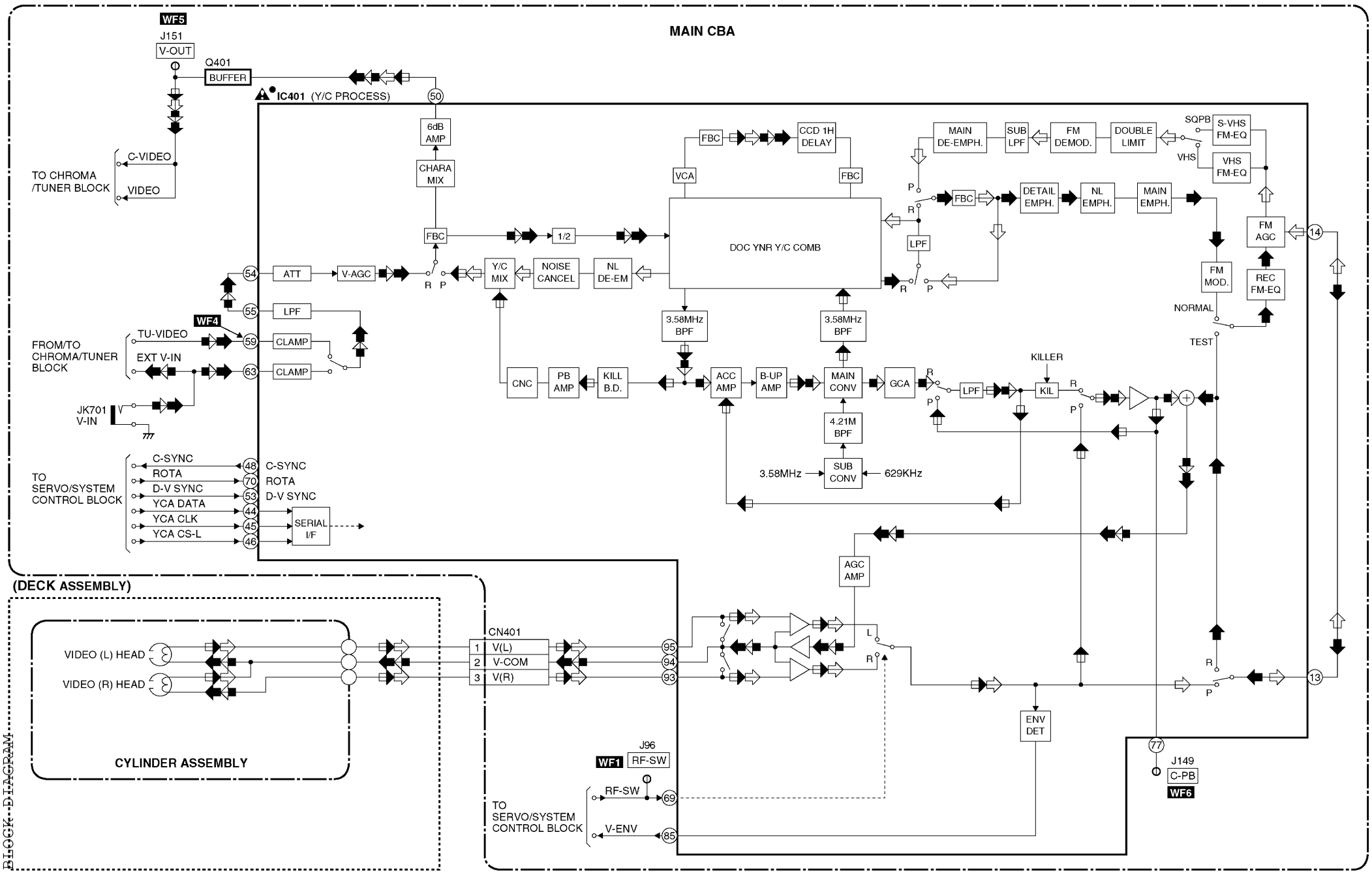
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC



Audio Block Diagram

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

"● " = SMD

TEST POINT INFORMATION
:INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
:USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
:USED TO INDICATE A TEST POINT WITH NO TEST PIN.
:USED TO INDICATE A TEST POINT WITH A TEST PIN.

PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC

MAIN CBA

IC301 INPUT SELECT

FROM/TO CHROMA/TUNER BLOCK
TU-AUDIO
FROM/TO SERVO/SYSTEM CONTROL BLOCK
SDA
SCL
JK702 A-IN
WF7
LIMITER
FM DET
AF AMP
BUS I/F
D/A CONV.
TUNER
LINE/PB
AF AMP
WF8
J150
A-OUT
IC801 (AMP)
OUTPUT AMP
Q801
SP-MUTE-H FROM PIN12 OF IC201
Q302
AMP
JK801 EARPHONE JACK
CN801
SP
SP-GND
SP801 SPEAKER

BLOCK DIAGRAM FOR SECTION 2 (DECK MECHANISM)

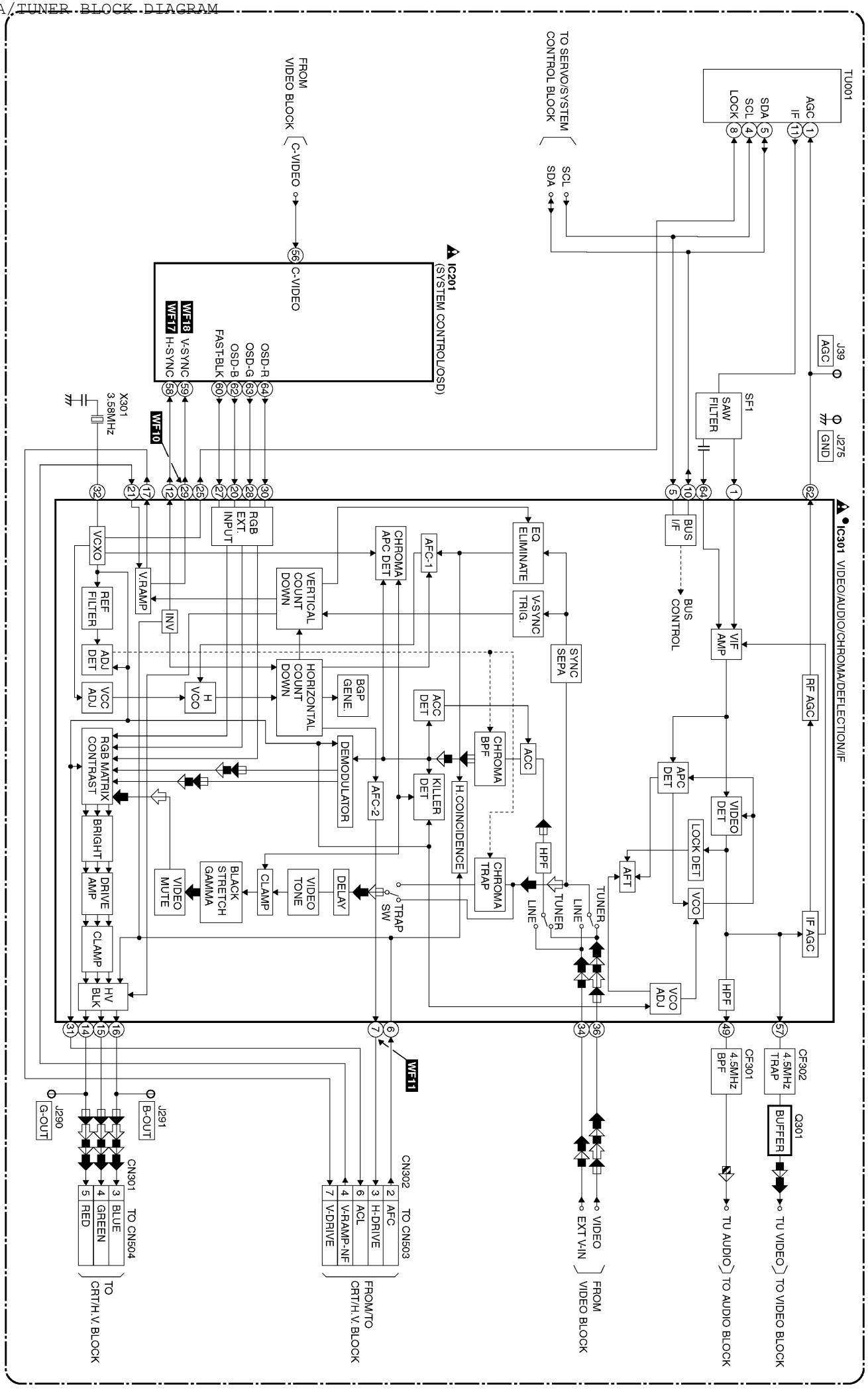
AC HEAD ASSEMBLY
AUDIO HEAD
AUDIO ERASE HEAD
CN287
A-PB/REC 4
A-COM 3
AE-H 1
AE-H/FE-H 2
CN402
7 A-PB/REC
6 A-COM
4 AE-H
5 AE-H/FE-H

FE HEAD UNIT
FULL ERASE HEAD
CN403
1 FE-H
2 FE-H GND

IC401 (AUDIO PROCESS)
TUNER
LINE
ALC
PB-ON
EQ AMP
SP/LP-ON
LPF
LINE AMP
MUTE
WF8
Q852
BIAS OSC
Q851 (SWITCHING)
P-ON+5V
AUTO BIAS
WF9
REC AMP
D-REC-H
SERIAL I/F
Q854 (SWITCHING PB-ON)
Q853 (SWITCHING D-REC-OFF)
P-ON+5V
Q855 (SWITCHING PB-ON)
YCA-DATA
YCA-CLK
YCA CS-L
A-MUTE-H
D-REC-H
TO SERVO/ SYSTEM CONTROL BLOCK

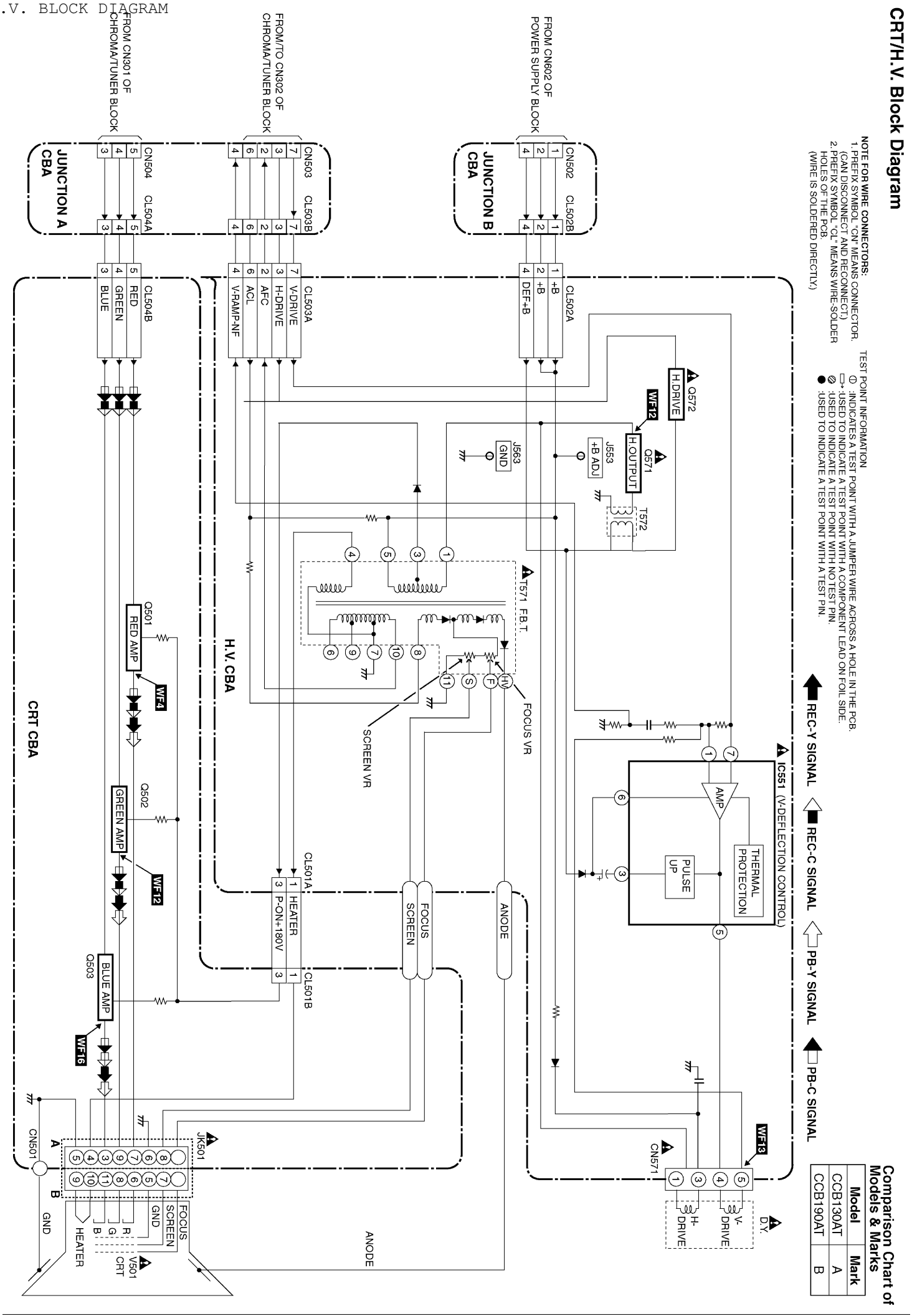
AUDIO BLOCK DIAGRAM

Chroma/Tuner Block Diagram



CRT/H.V. BLOCK DIAGRAM

CRT/H.V. Block Diagram



Comparison Chart of Models & Marks

Model	Mark
CCB130AT	A
CCB190AT	B

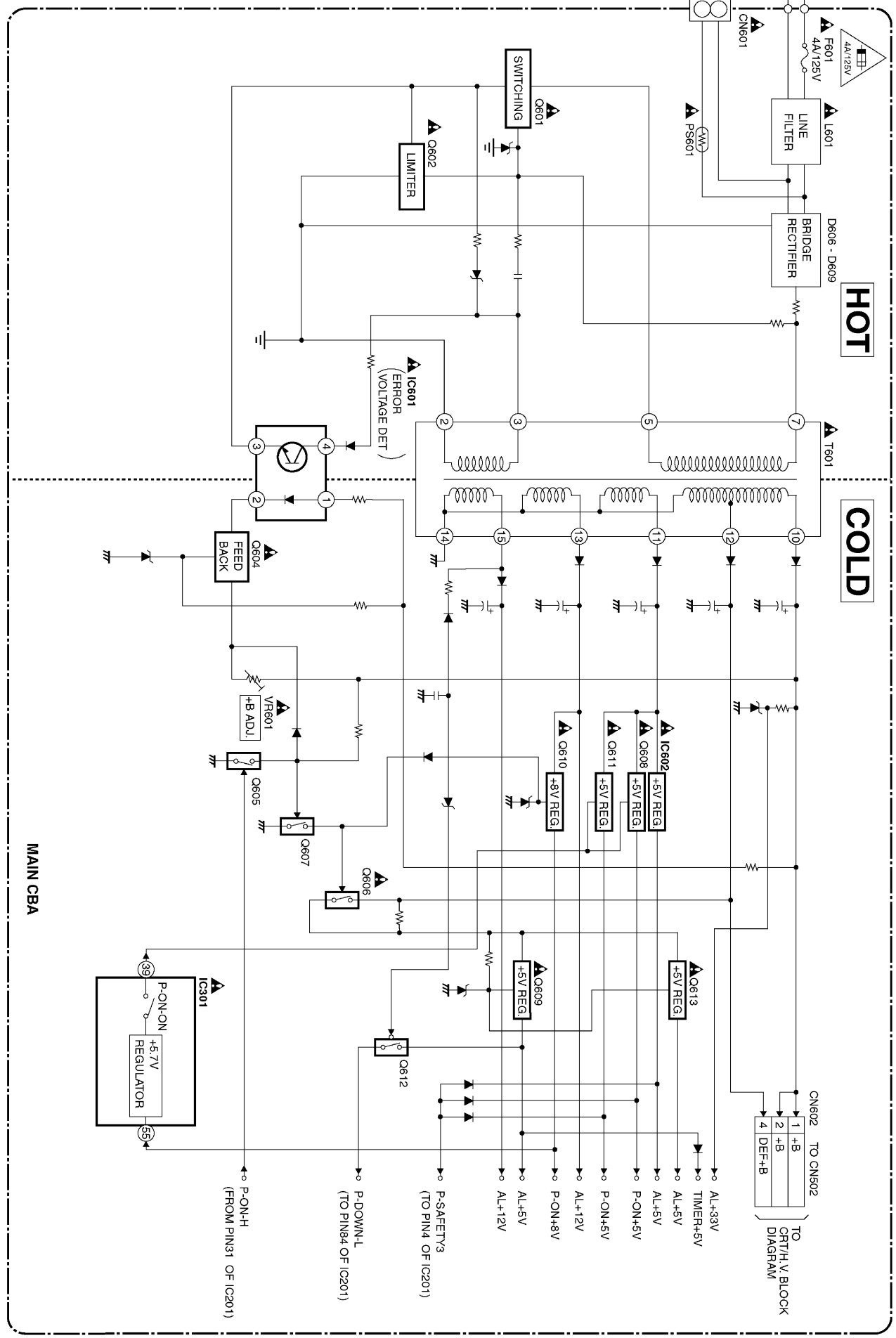
Power Supply Block Diagram

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Servo/System Control Block Diagram

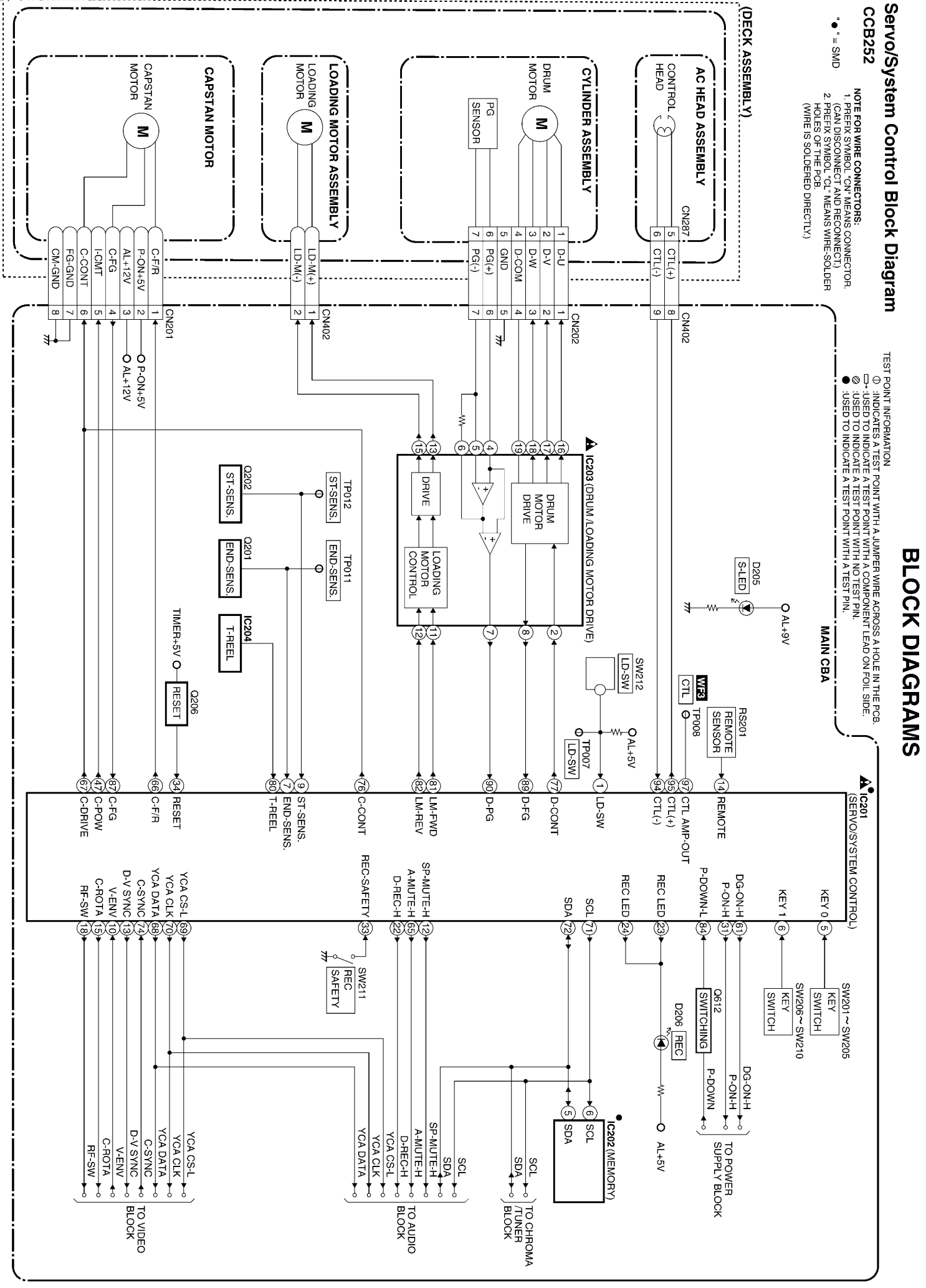
CCB252

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

"●" = SMD

TEST POINT INFORMATION
Ⓣ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
□→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
▨ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

BLOCK DIAGRAMS



Video Block Diagram

CCB252

"● " = SMD

NOTE FOR WIRE CONNECTORS:
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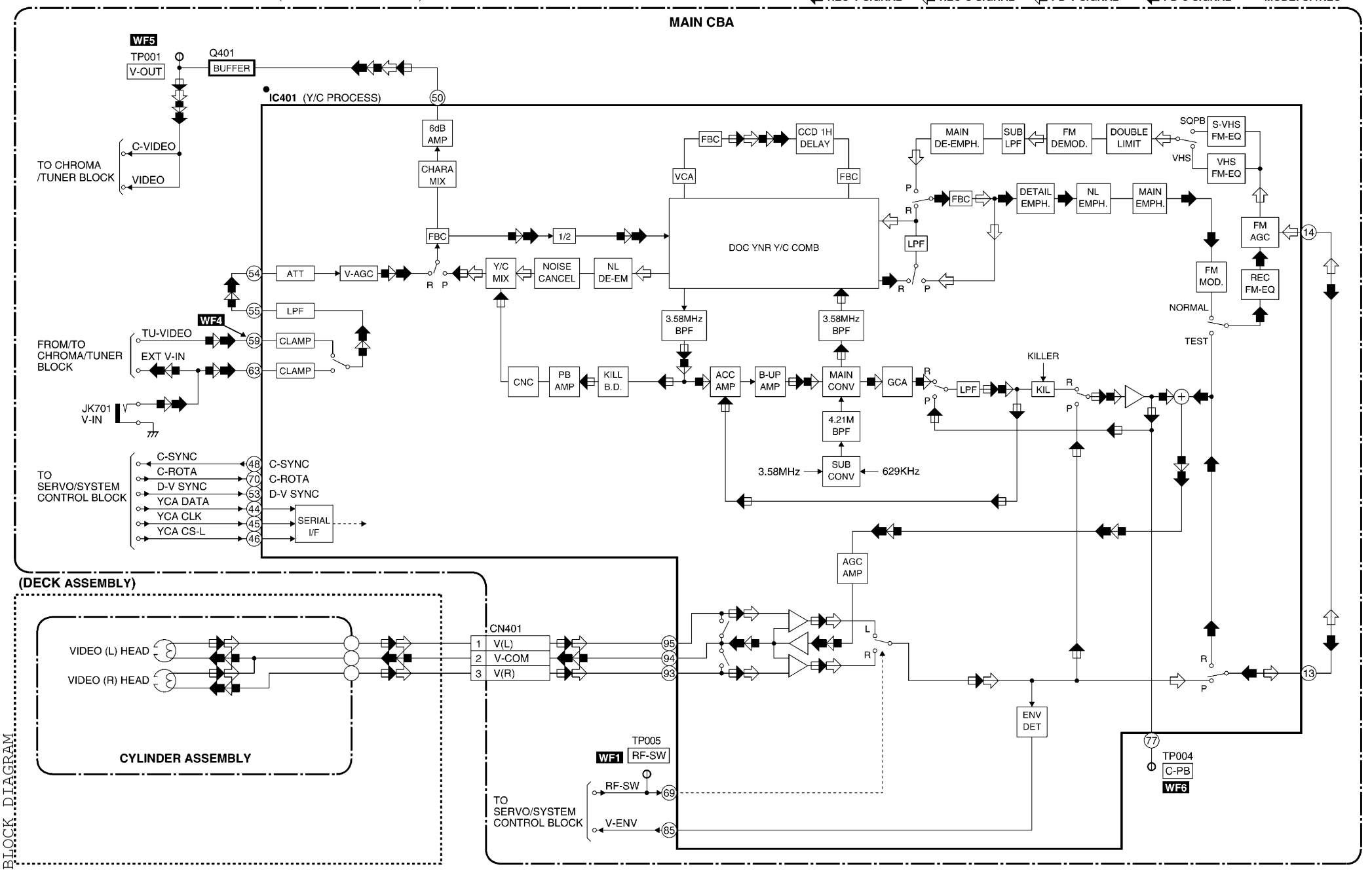
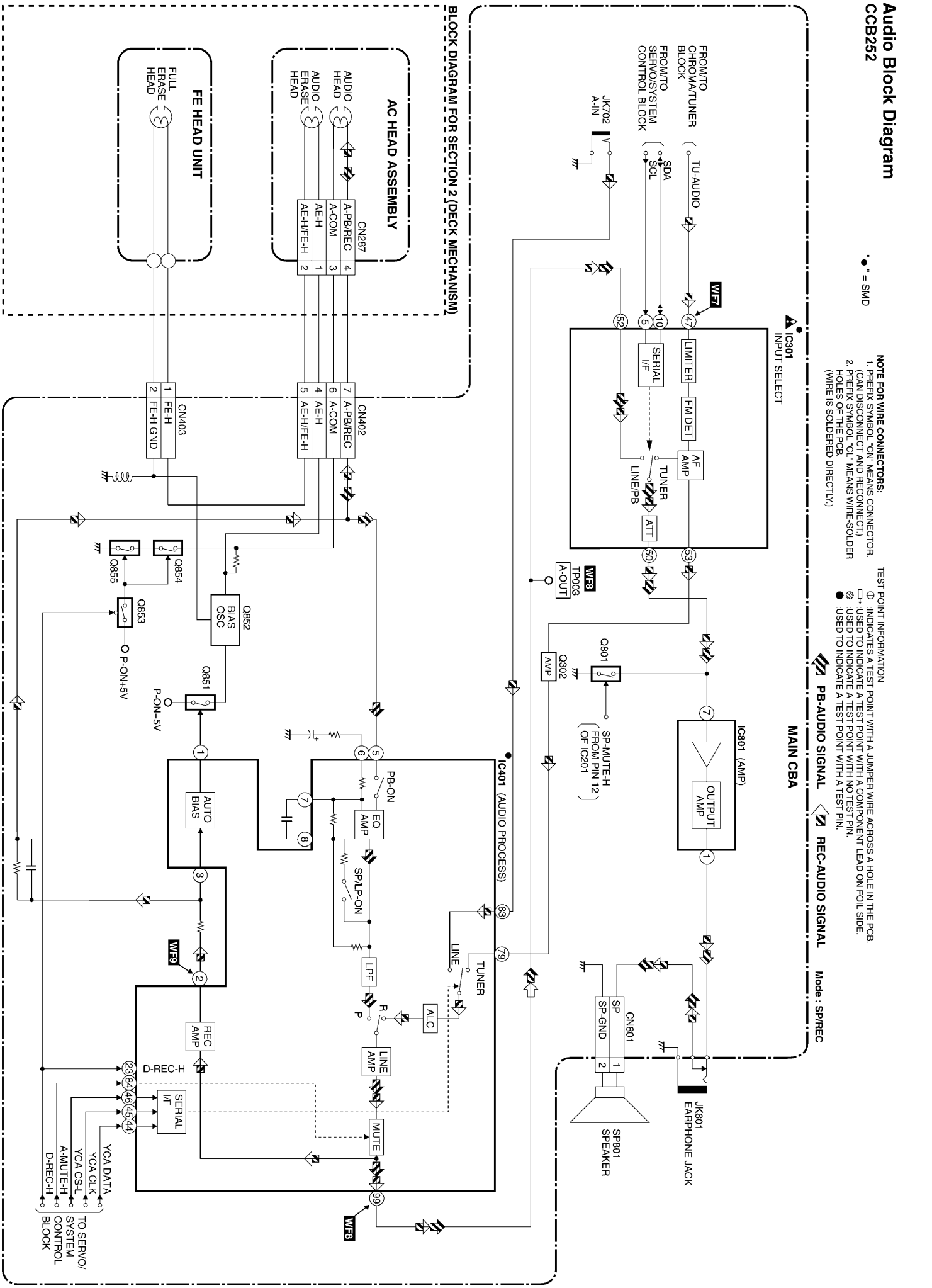
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC



Audio Block Diagram
CCB252



Chroma/Tuner Block Diagram

CCB252

"●" = SMD

NOTE FOR WIRE CONNECTORS:
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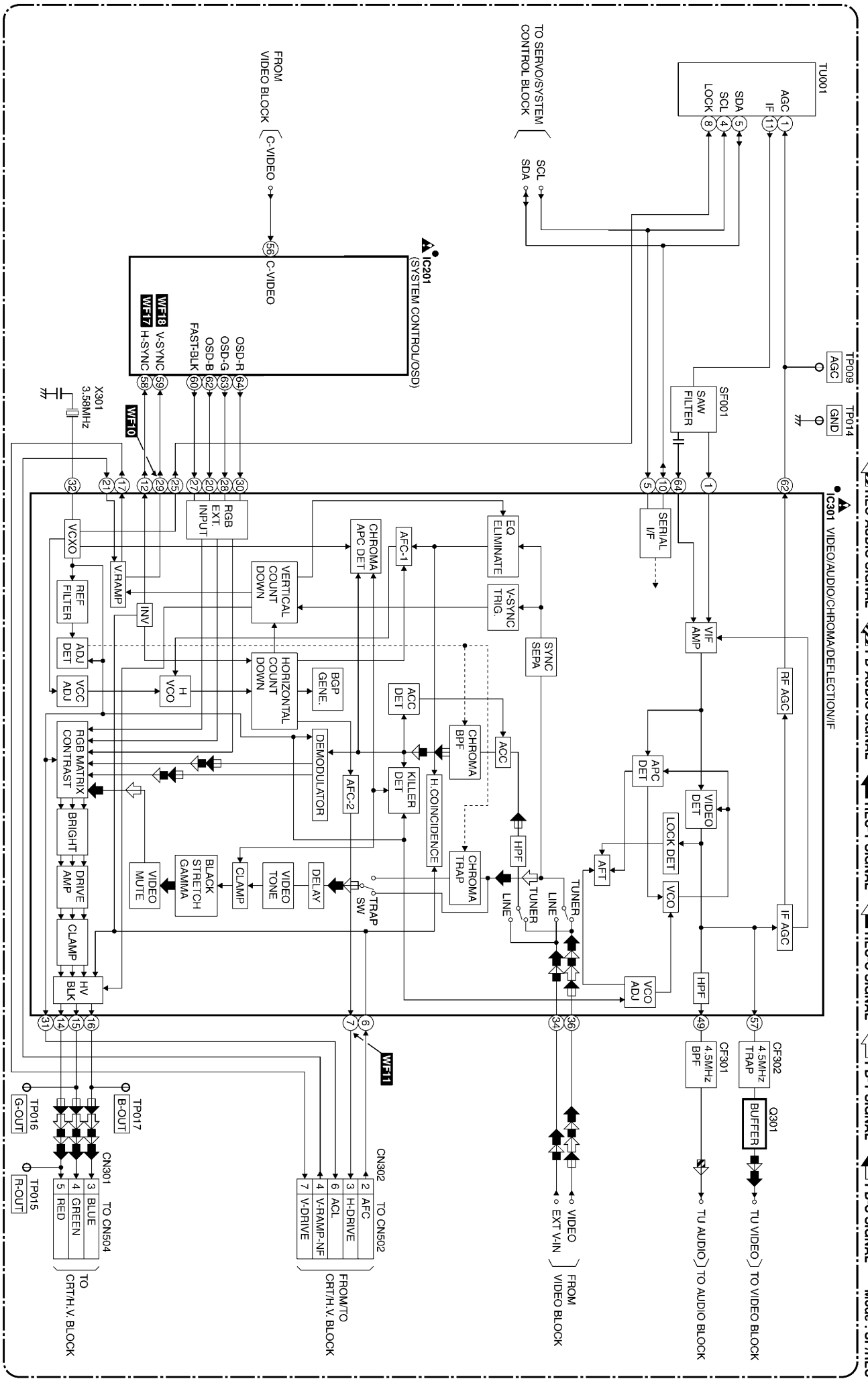
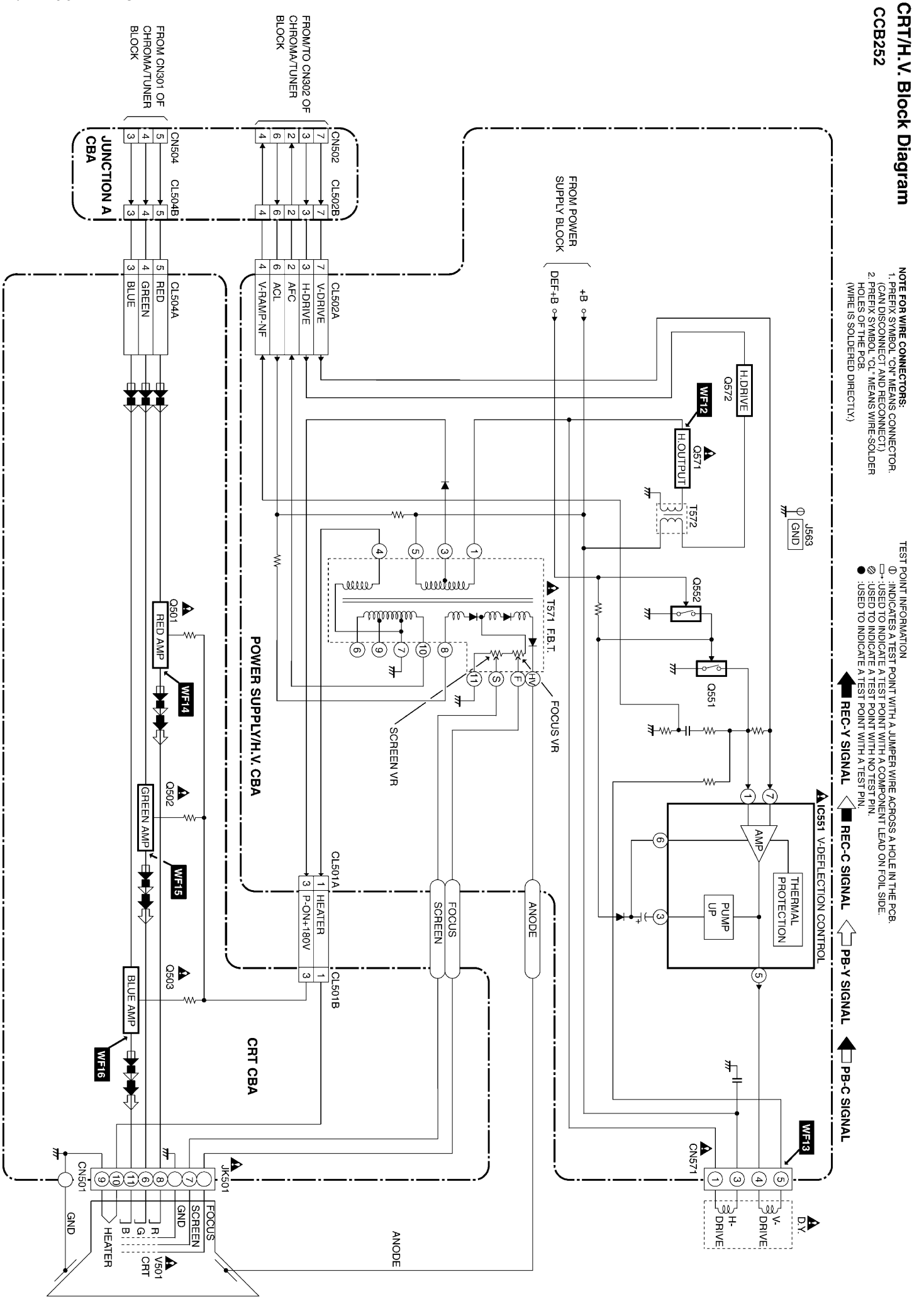
REC-AUDIO SIGNAL | PB-AUDIO SIGNAL | REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | Mode : SP/REC



CRT/H.V. Block Diagram

CCB252



Power Supply Block Diagram

CCB252

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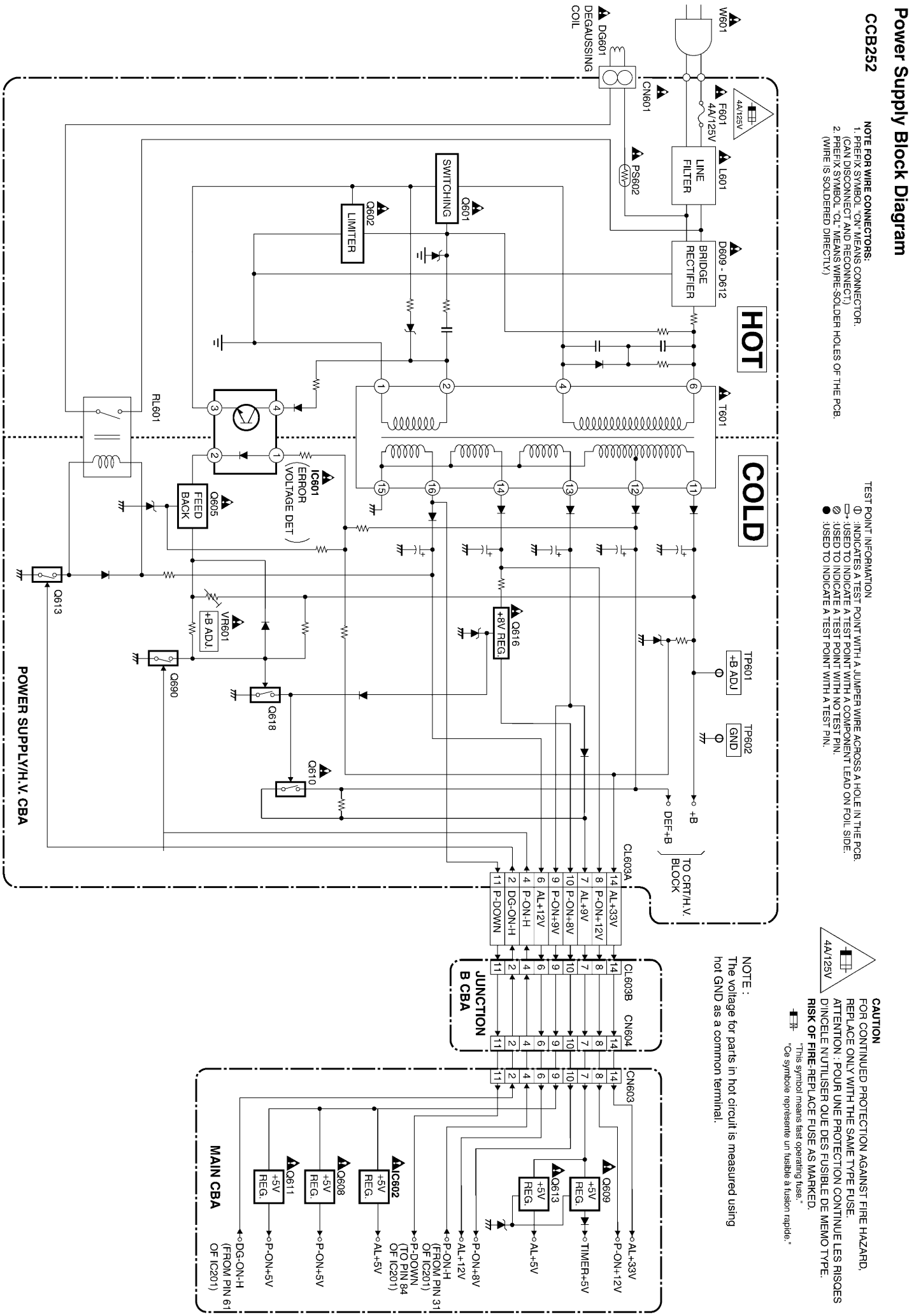
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQUES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Servo/System Control Block Diagram
CCB132

BLOCK DIAGRAMS

"●" = SMD

NOTE FOR WIRE CONNECTORS:
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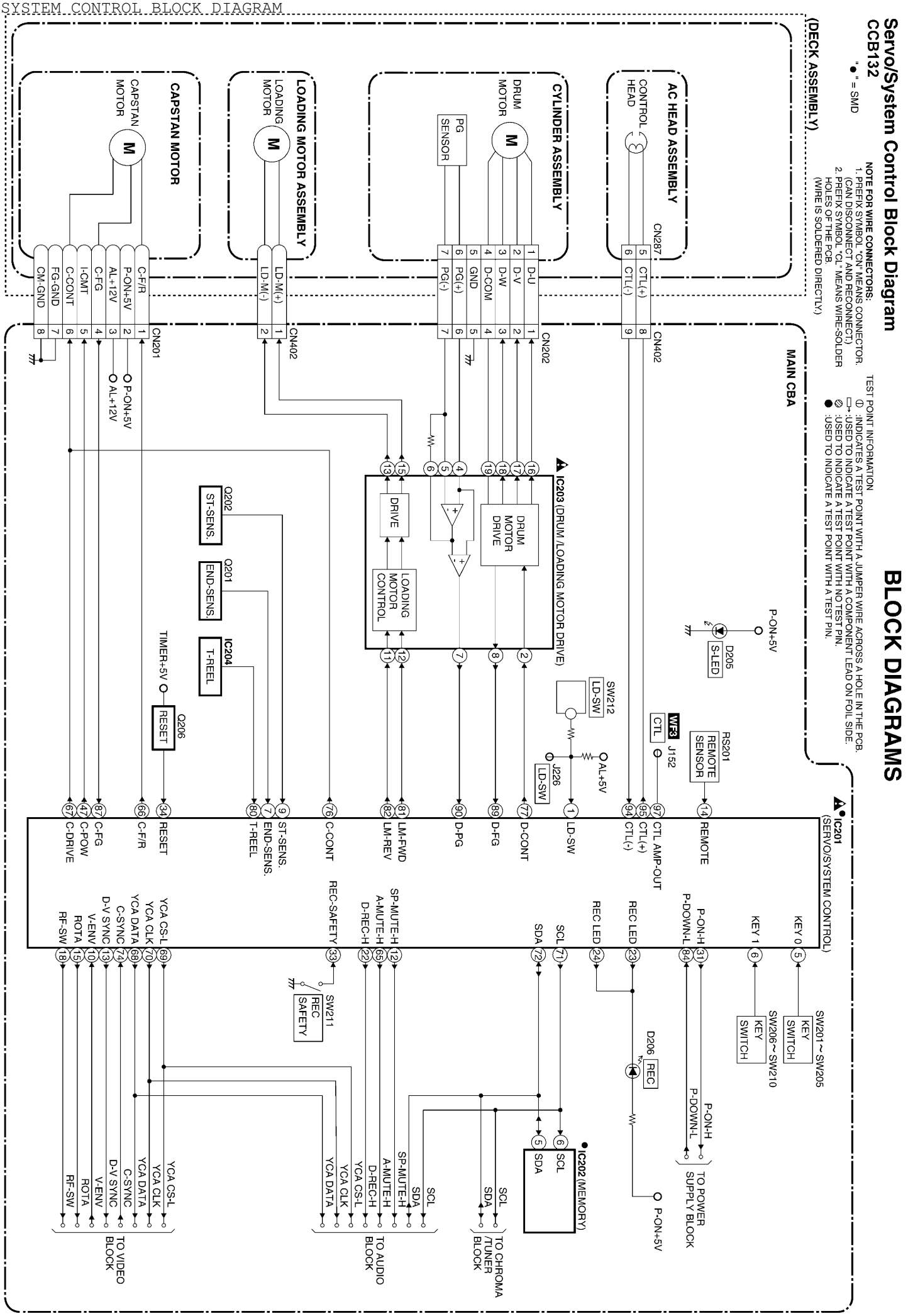
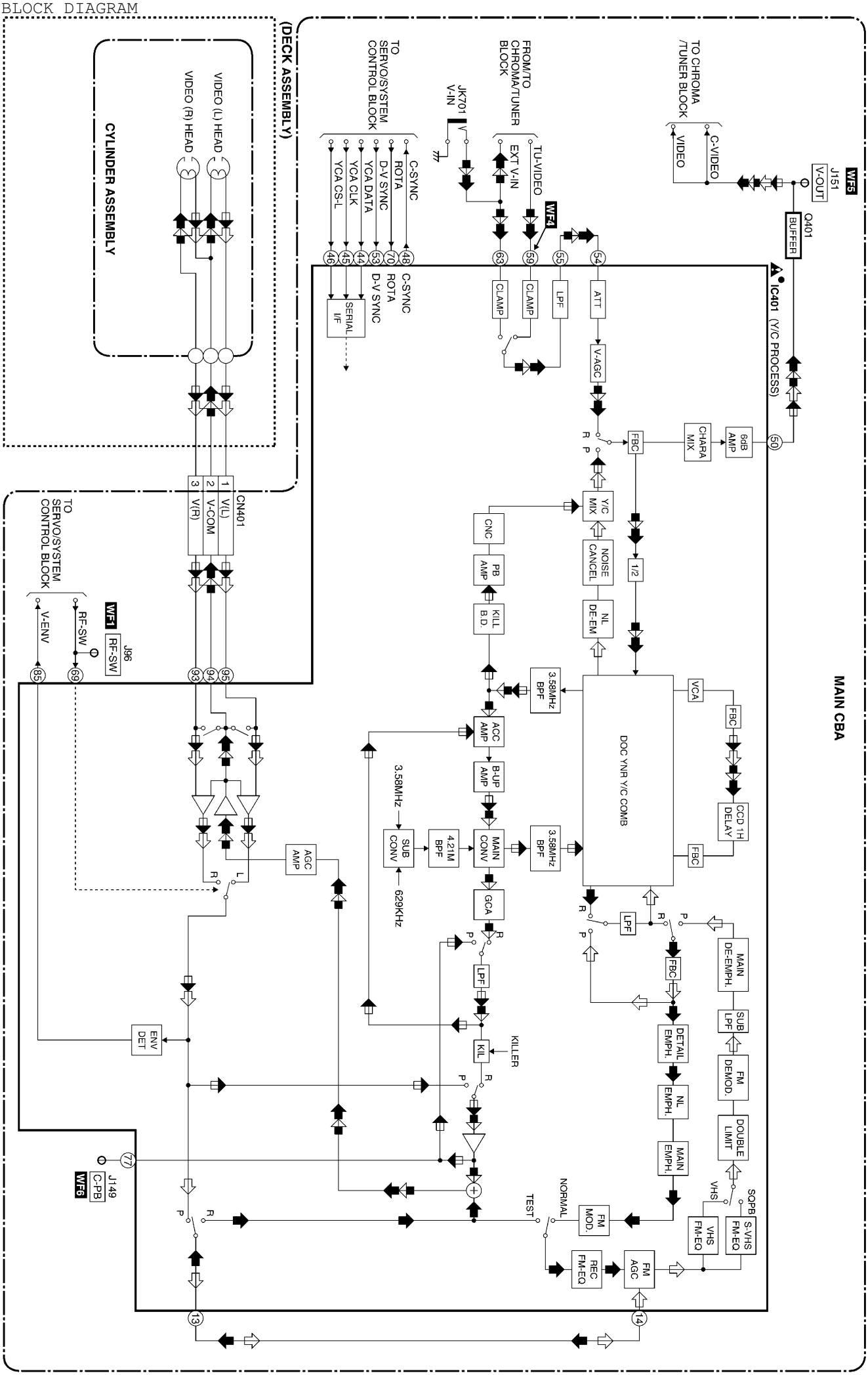


VIDEO BLOCK DIAGRAM

Video Block Diagram
CCB132



Audio Block Diagram

CCB132

NOTE FOR WIRE CONNECTORS:
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"● " = SMD

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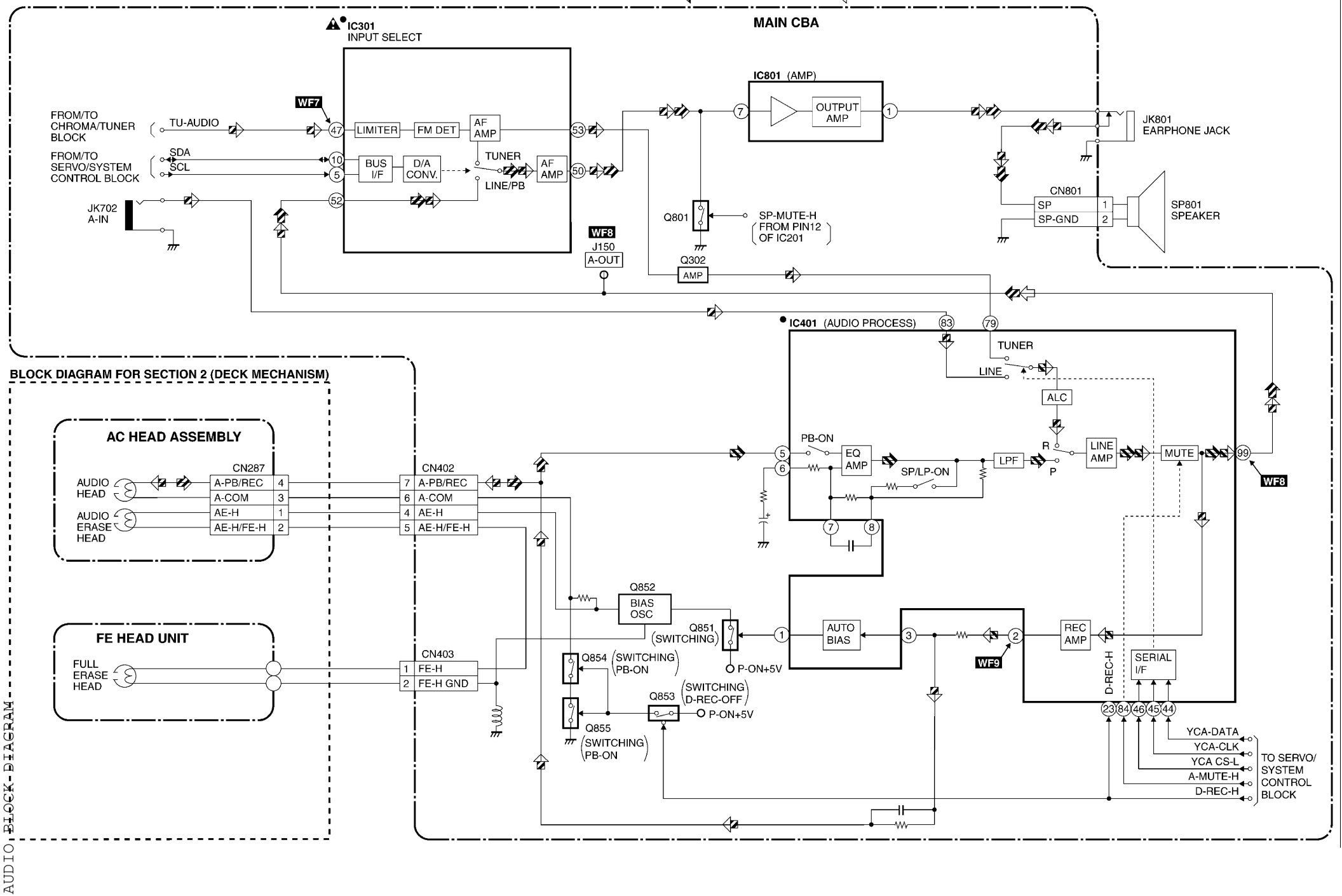
PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC

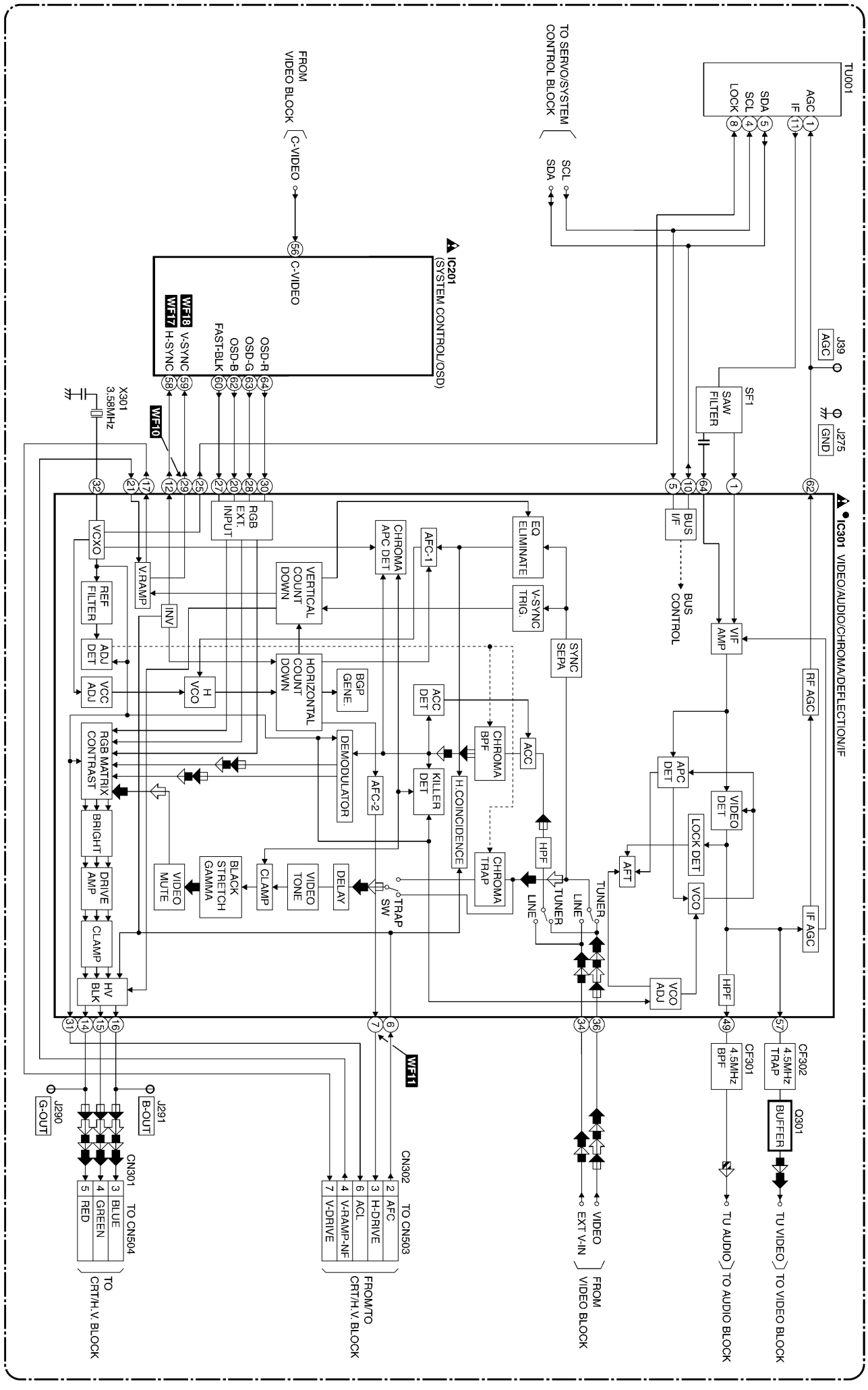


AUDIO BLOCK DIAGRAM

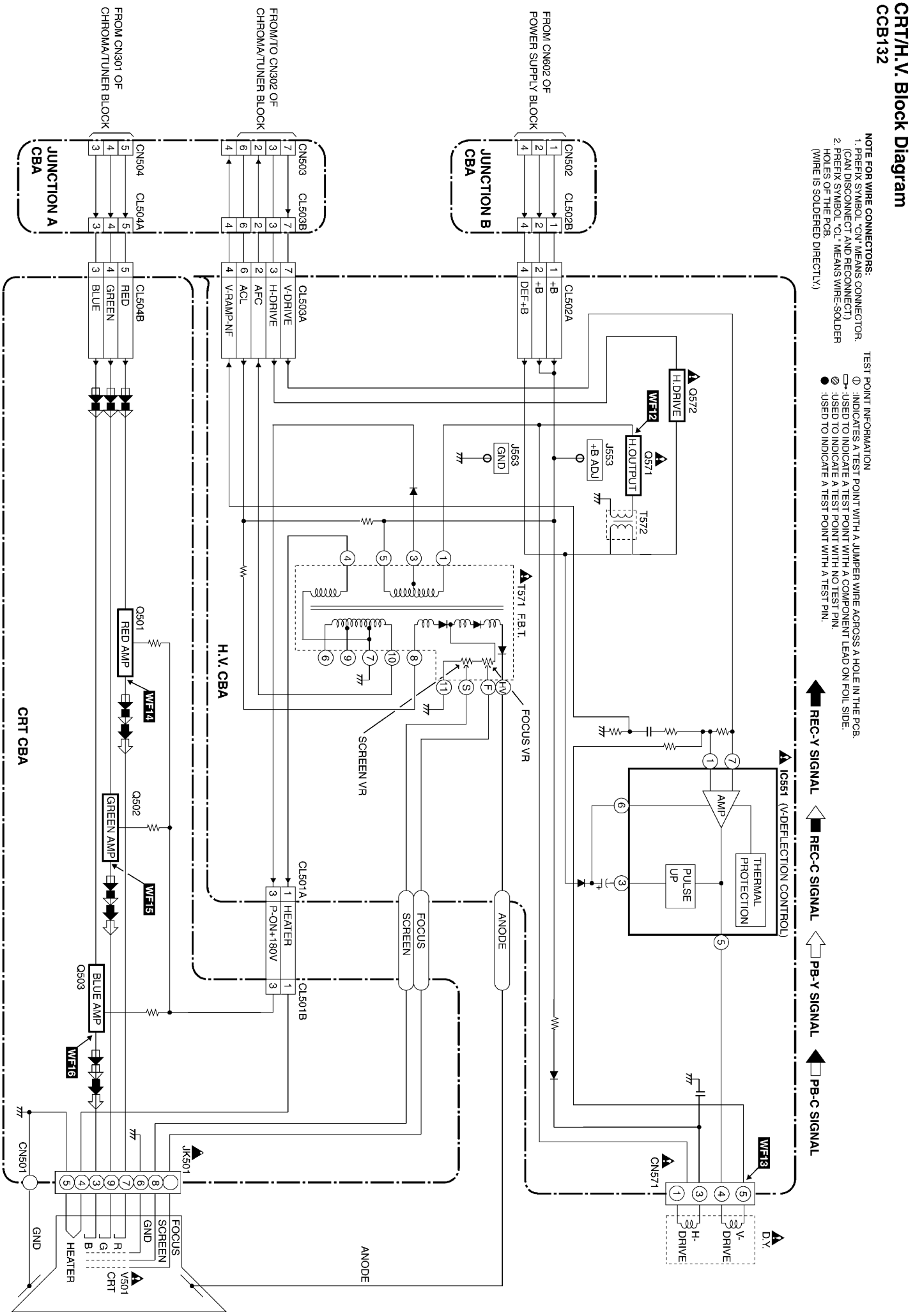
CHROMA/TUNER BLOCK DIAGRAM

Chroma/Tuner Block Diagram

CCB132



CRT/H.V. Block Diagram
CCB132



Power Supply Block Diagram

CCB132

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

4A/125V

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
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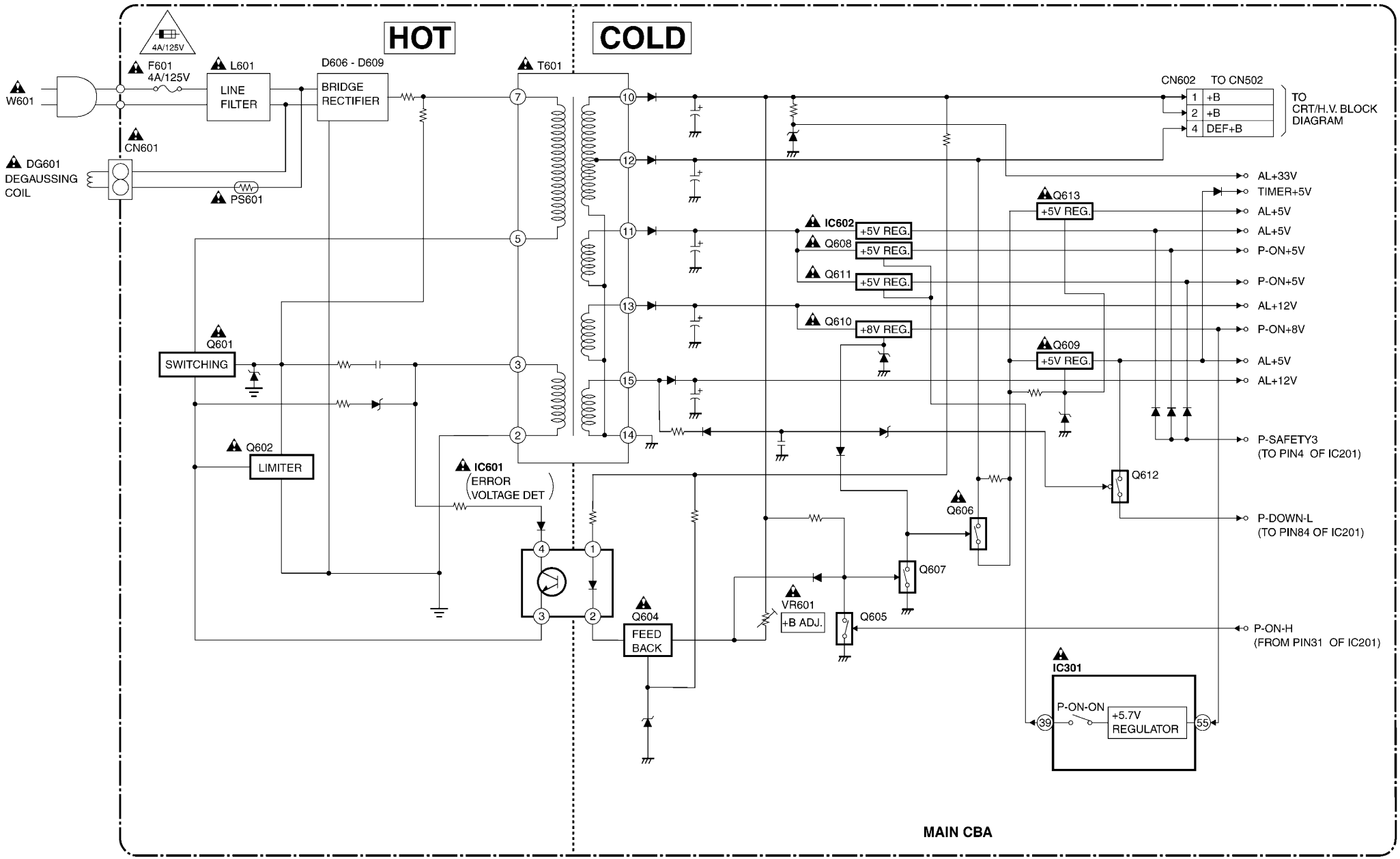
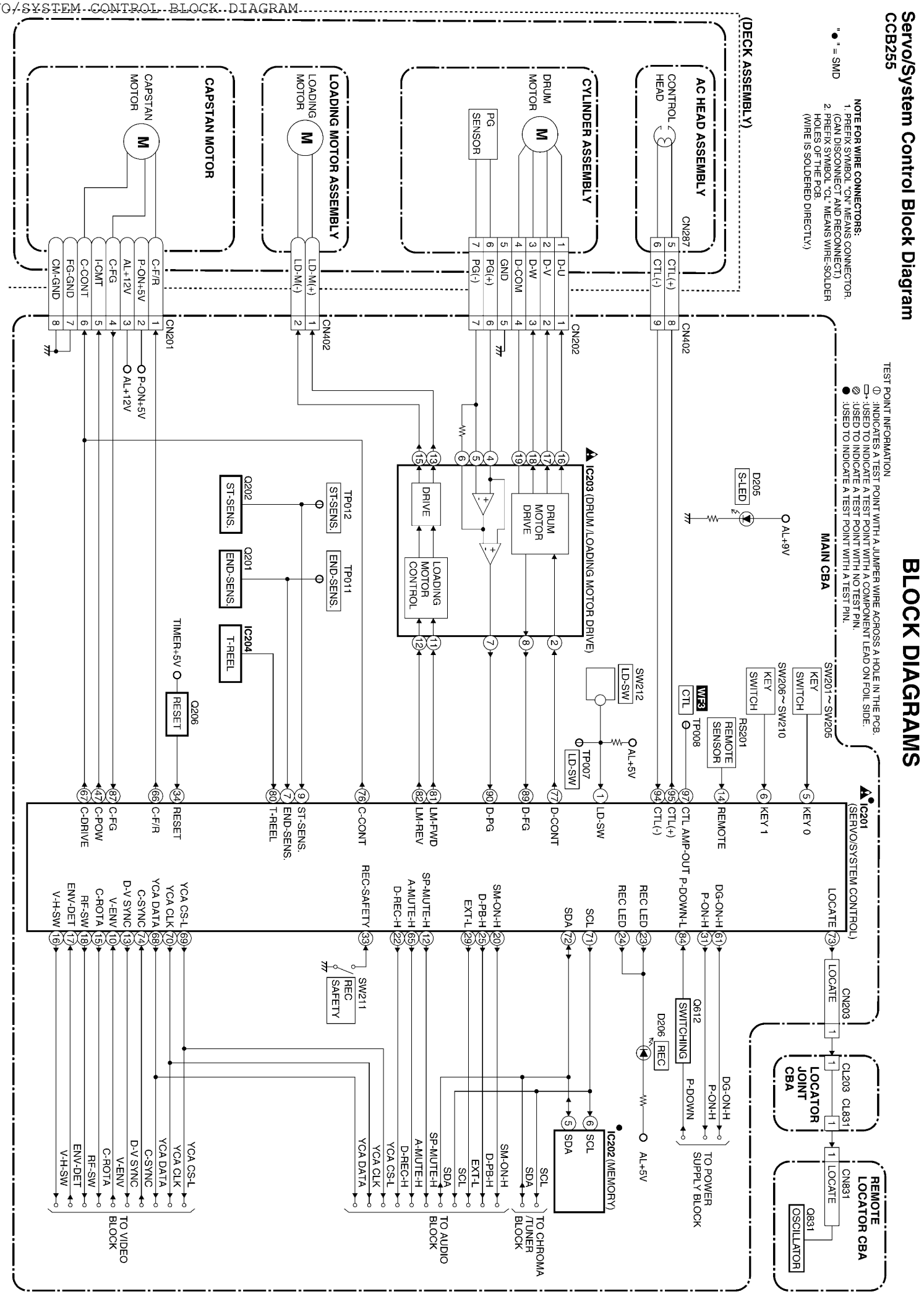
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



POWER SUPPLY BLOCK DIAGRAM

Servo/System Control Block Diagram
CCB255

BLOCK DIAGRAMS



VIDEO BLOCK DIAGRAM

Video Block Diagram
CCB255

"●" = SMD

NOTE FOR WIRE CONNECTORS:
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TEST POINT INFORMATION
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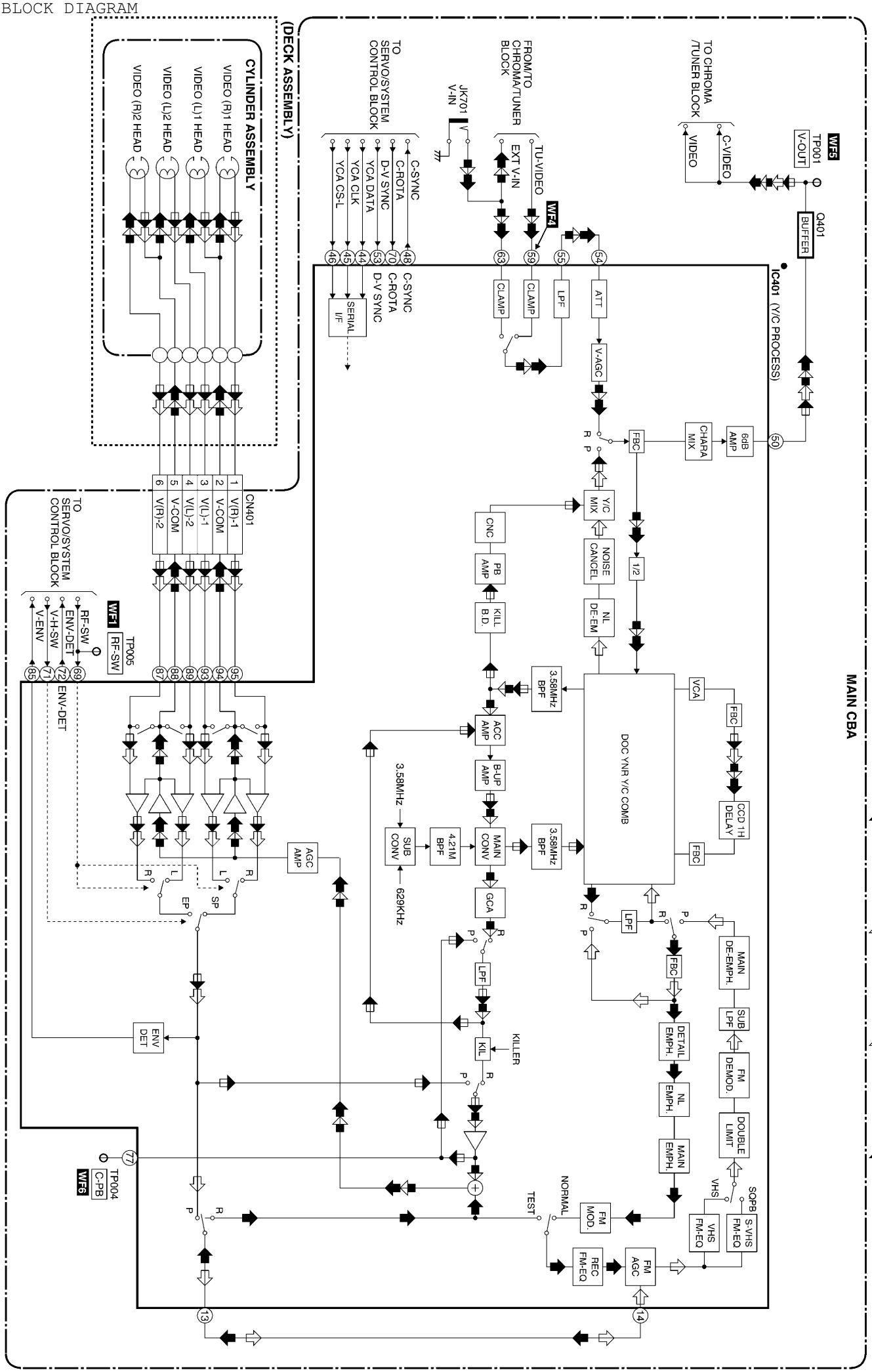
●: USED TO INDICATE A TEST POINT WITH A TEST PIN.

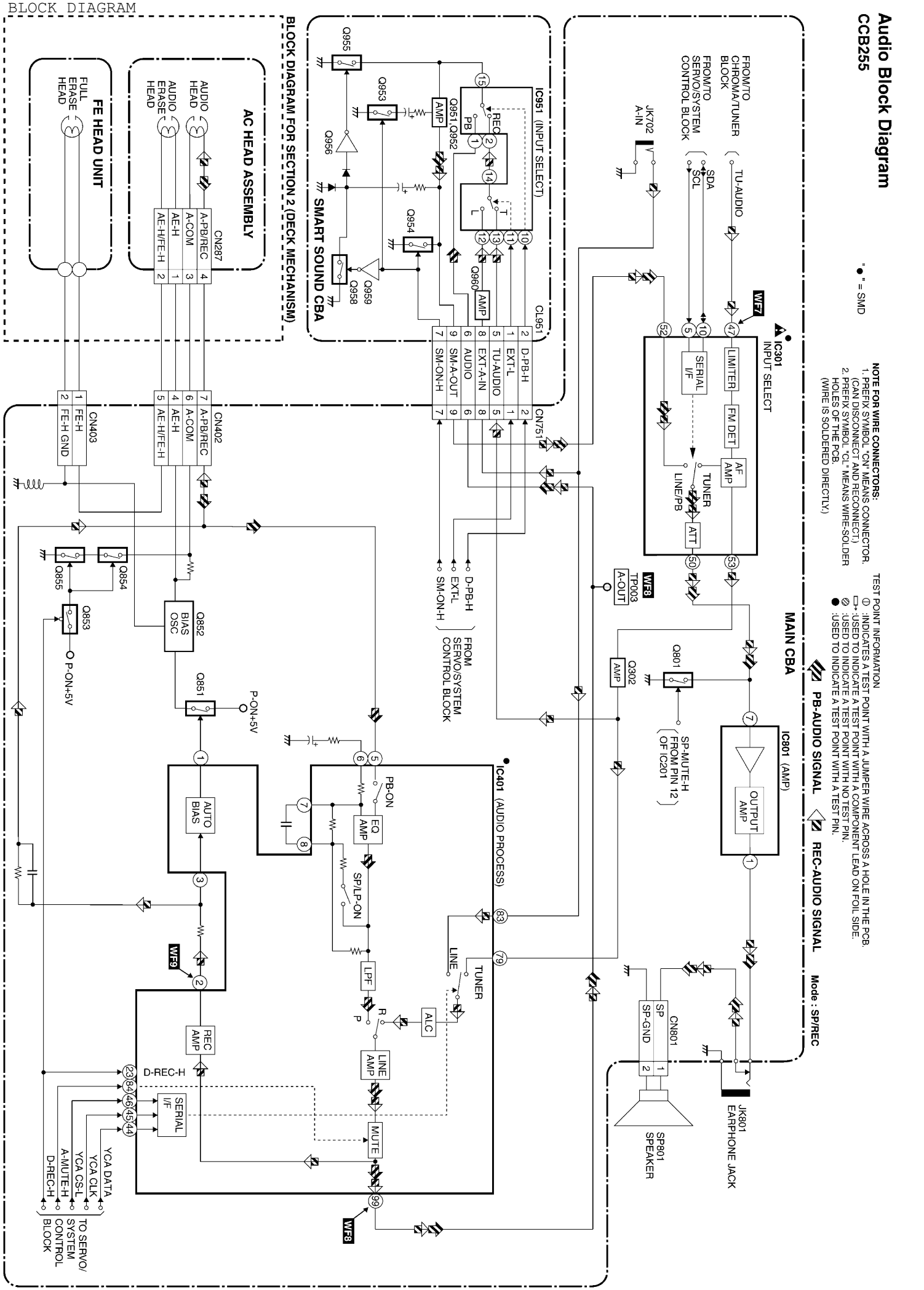
REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC

MAIN CBA



Audio Block Diagram

CCB255



Chroma/Tuner Block Diagram
CCB255

"●" = SMD

NOTE FOR WIRE CONNECTORS:
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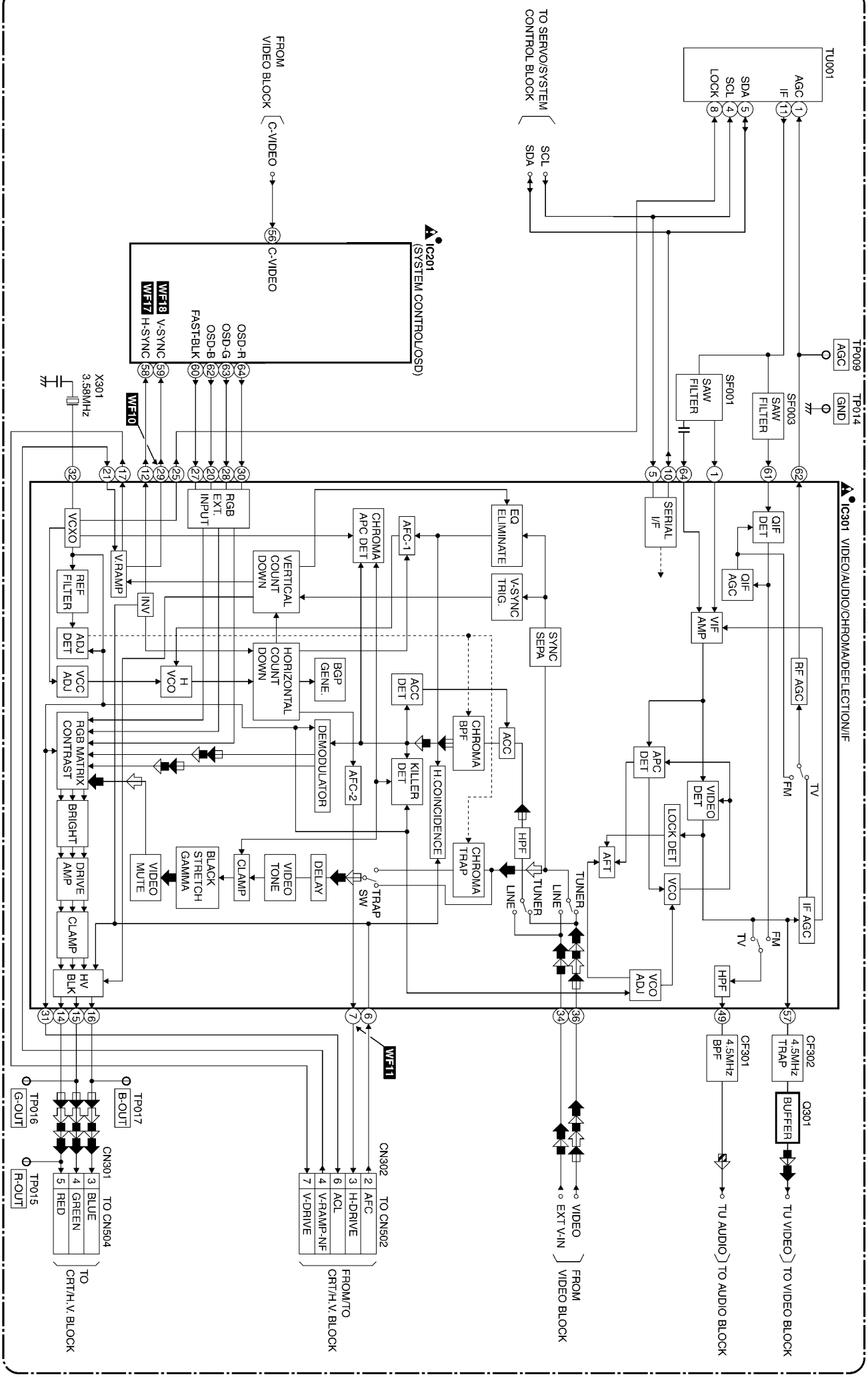
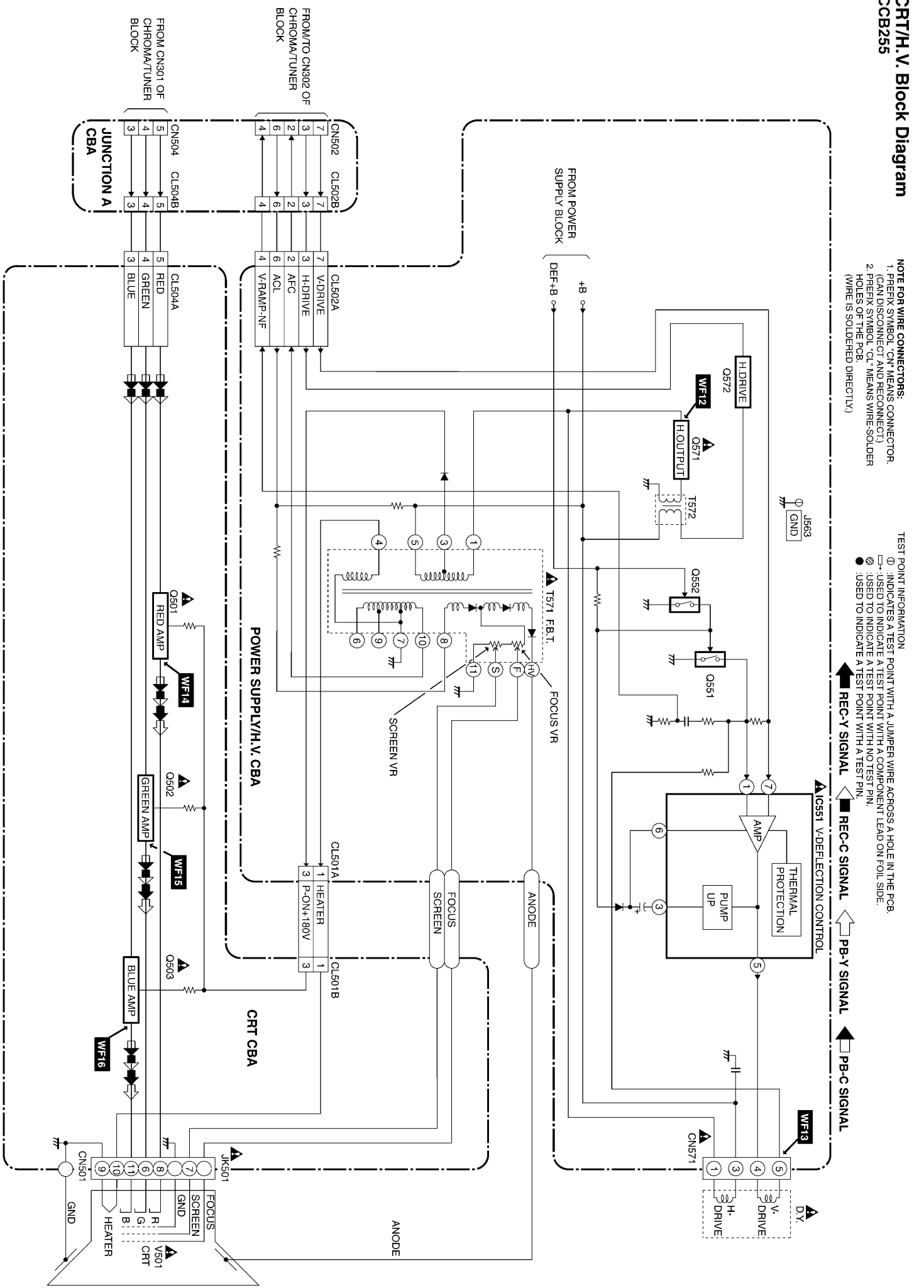
REC-AUDIO SIGNAL | PB-AUDIO SIGNAL | REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | Mode : SP/REC



CRT/H.V. Block Diagram
CCB255



Power Supply Block Diagram
CCB255

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4A/125V

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
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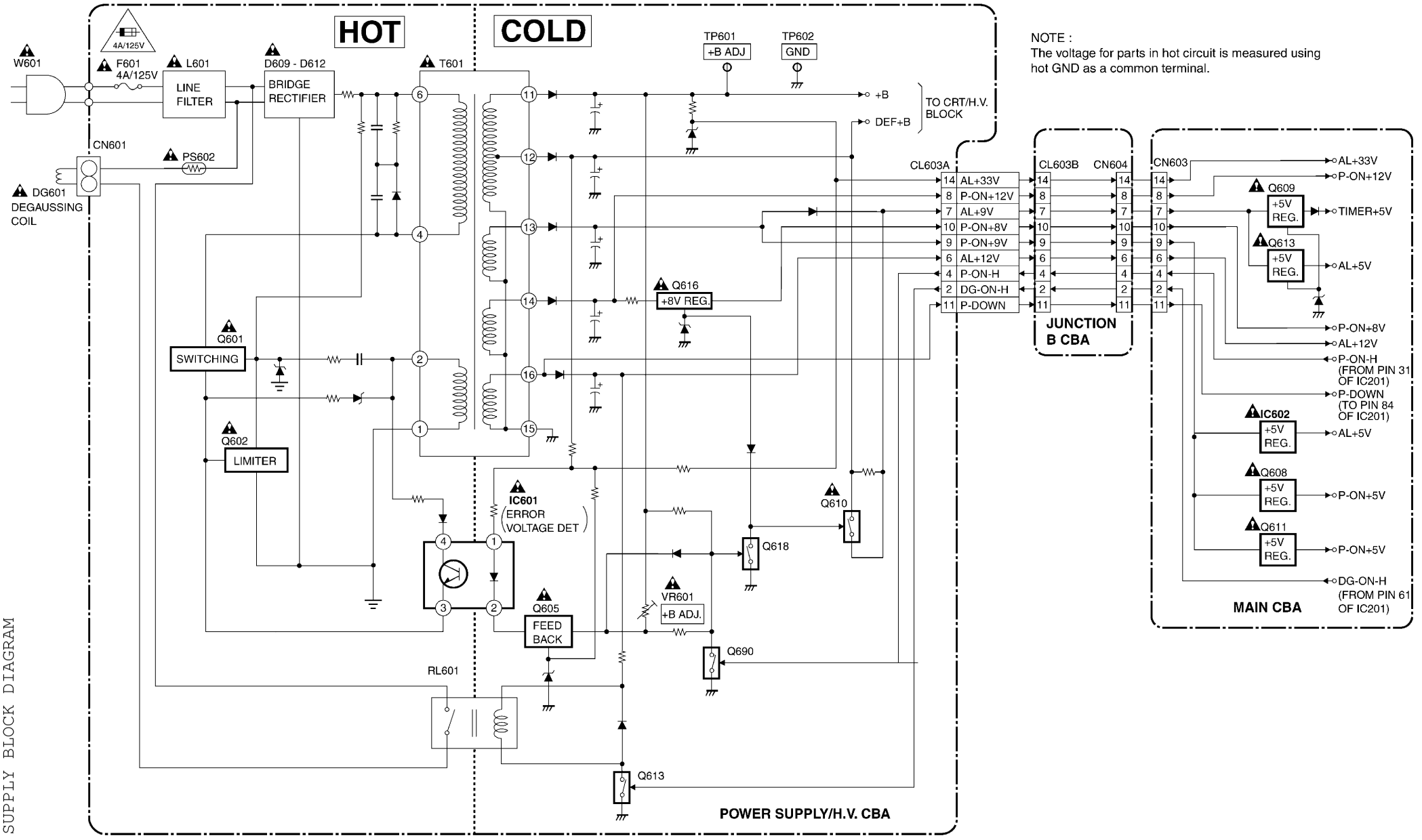

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

POWER SUPPLY BLOCK DIAGRAM

Servo/System Control Block Diagram

BLOCK DIAGRAMS

"●" = SMD

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Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

(DECK ASSEMBLY)

AC HEAD ASSEMBLY — CONTROL HEAD — CN287 — CTL(+) 5, CTL(-) 6

CYLINDER ASSEMBLY — DRUM MOTOR M — PG SENSOR — D-U 1, D-V 2, D-W 3, D-COM 4, GND 5, PG(+) 6, PG(-) 7

LOADING MOTOR ASSEMBLY — LOADING MOTOR M — LD-M(+) 1, LD-M(-) 2

CAPSTAN MOTOR — CAPSTAN MOTOR M — C-F/R 1, P-ON+5V 2, AL+12V 3, C-FG 4, I-CMT 5, C-CONT 6, FG-GND 7, CM-GND 8

CN402, CN202, CN201

MAIN CBA

IC203 (DRUM/LOADING MOTOR DRIVE) — DRUM MOTOR DRIVE — LOADING MOTOR CONTROL — DRIVE

Q202 ST-SENS. — Q201 END-SENS. — IC204 T-REEL — TIMER+5V — Q206 RESET

SW212 LD-SW — J226 LD-SW — AL+5V

D205 S-LED — P-ON+5V

RS201 REMOTE SENSOR — WF3 J152 CTL

IC201 (SERVO/SYSTEM CONTROL)

1	LD-SW	
2	D-CONT	
5	KEY 0	SW201~SW205 KEY SWITCH
6	KEY 1	SW206~SW210 KEY SWITCH
7	SCL	
8	D-FG	
12	SP-MUTE-H	
13	A-MUTE-H	
14	REMOTE	
15	D-REC-H	
16	H,I	
17	REC-SAFETY	SW211 REC SAFETY
18	SM-ON-H	
19	D-PB-H	
20	EXT-L	
21	YCA CS-L	
22	YCA CLK	
23	YCA DATA	
24	C-SYNC	
25	D-V SYNC	
26	V-ENV	
27	ROTA	
28	RF-SW	
29	H-A-SW	
30	ENV-DET	
31	P-ON-H	
32	P-DOWN-L	
33	REC LED	D206 REC
34	RESET	
66	C-F/R	
67	C-DRIVE	
68	C-POW	
69	C-FG	
70	C-CONT	
71	LM-REV	
72	LM-FWD	
73	T-REEL	
74	END-SENS.	
75	ST-SENS.	
76	C-CONT	
77	D-CONT	
78	D-FG	
79	D-PG	
80	LD-SW	
81	CTL AMP-OUT	
82	CTL(+)	
83	CTL(-)	

IC202 (MEMORY) — SCL 6, SDA 5

CN203 — LOCATE 2

CN831 — LOCATE 2

Q831 OSCILLATOR

REMOTE LOCATOR CBA

TO POWER SUPPLY BLOCK

TO CHROMA /TUNER BLOCK

TO AUDIO BLOCK

TO VIDEO BLOCK

Video Block Diagram (G, J)

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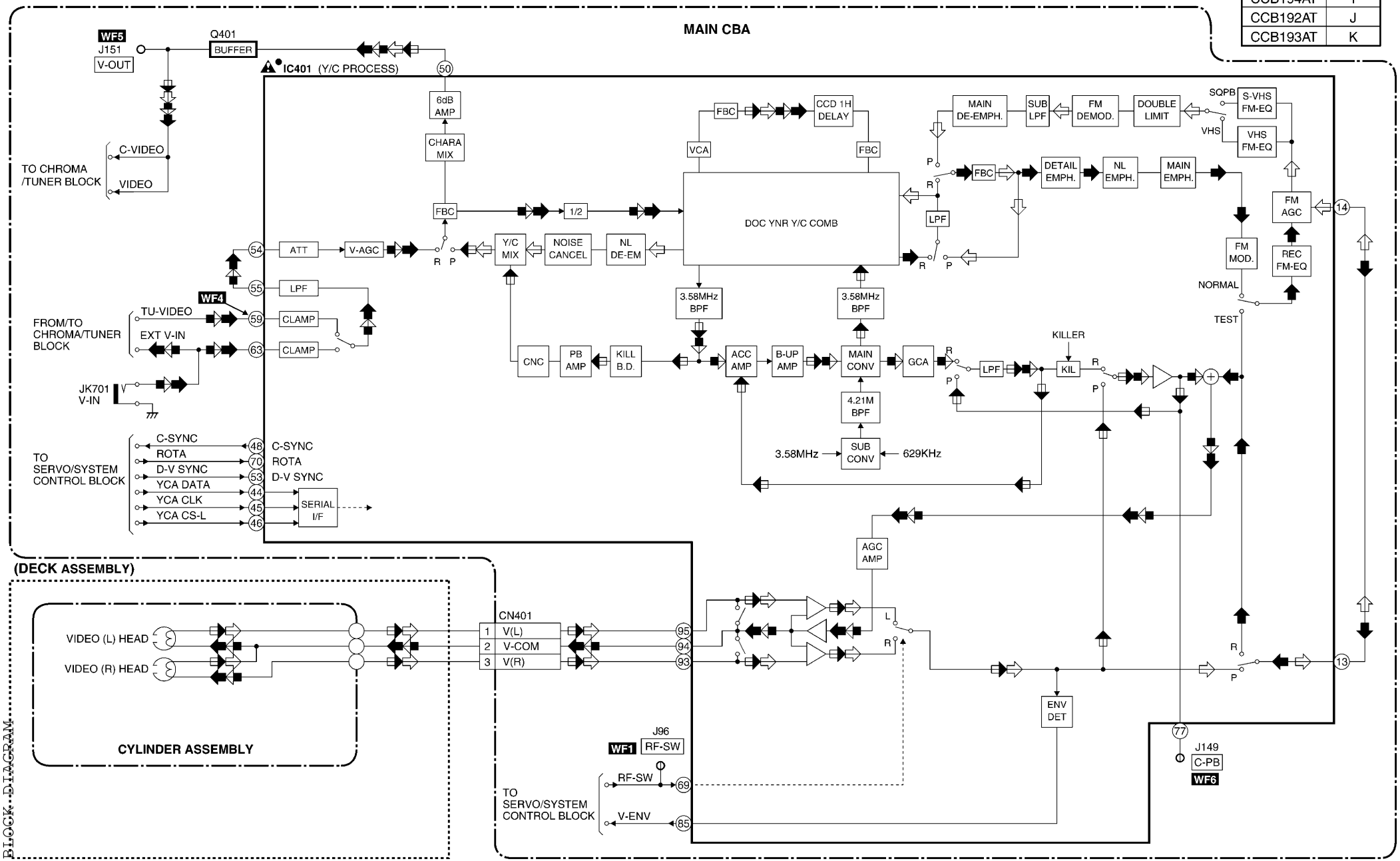
"● " = SMD

Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC



VIDEO BLOCK DIAGRAM

Audio Block Diagram

CC13B1, CCB134, CCB192
CCB193, CCB194

"● " = SMD

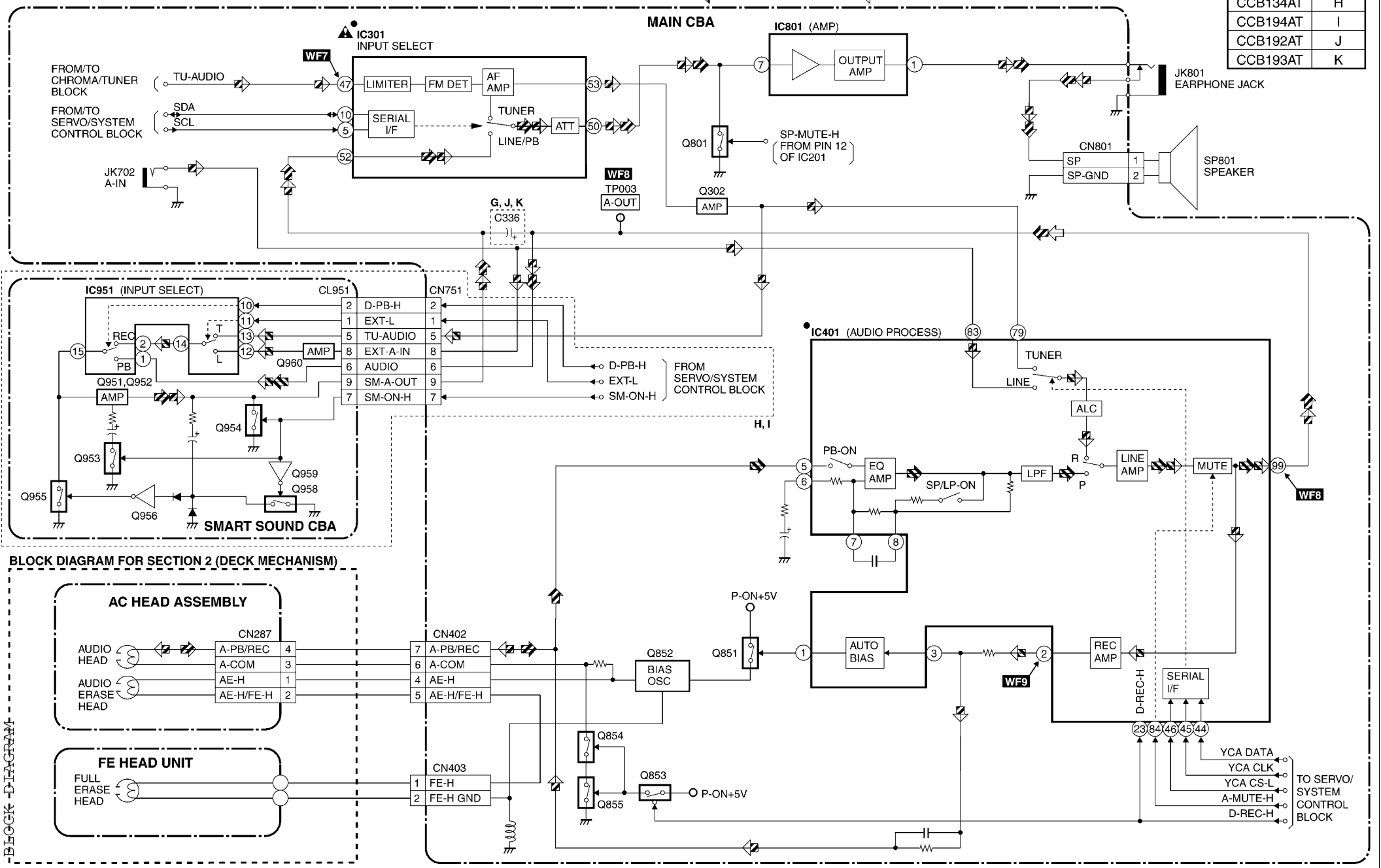
NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

TEST POINT INFORMATION
- ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

PB-AUDIO SIGNAL REC-AUDIO SIGNAL Mode : SP/REC

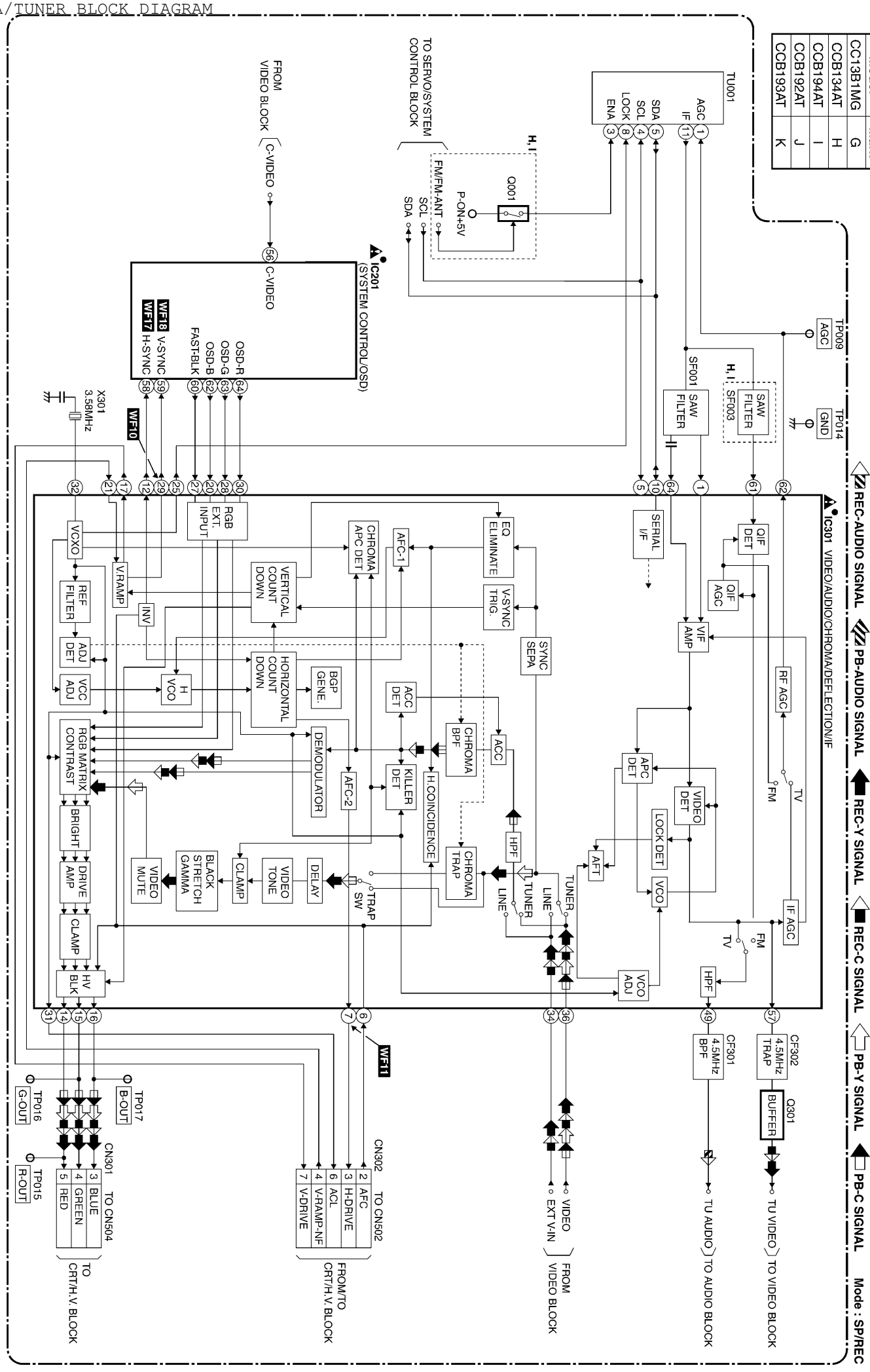


AUDIO BLOCK DIAGRAM

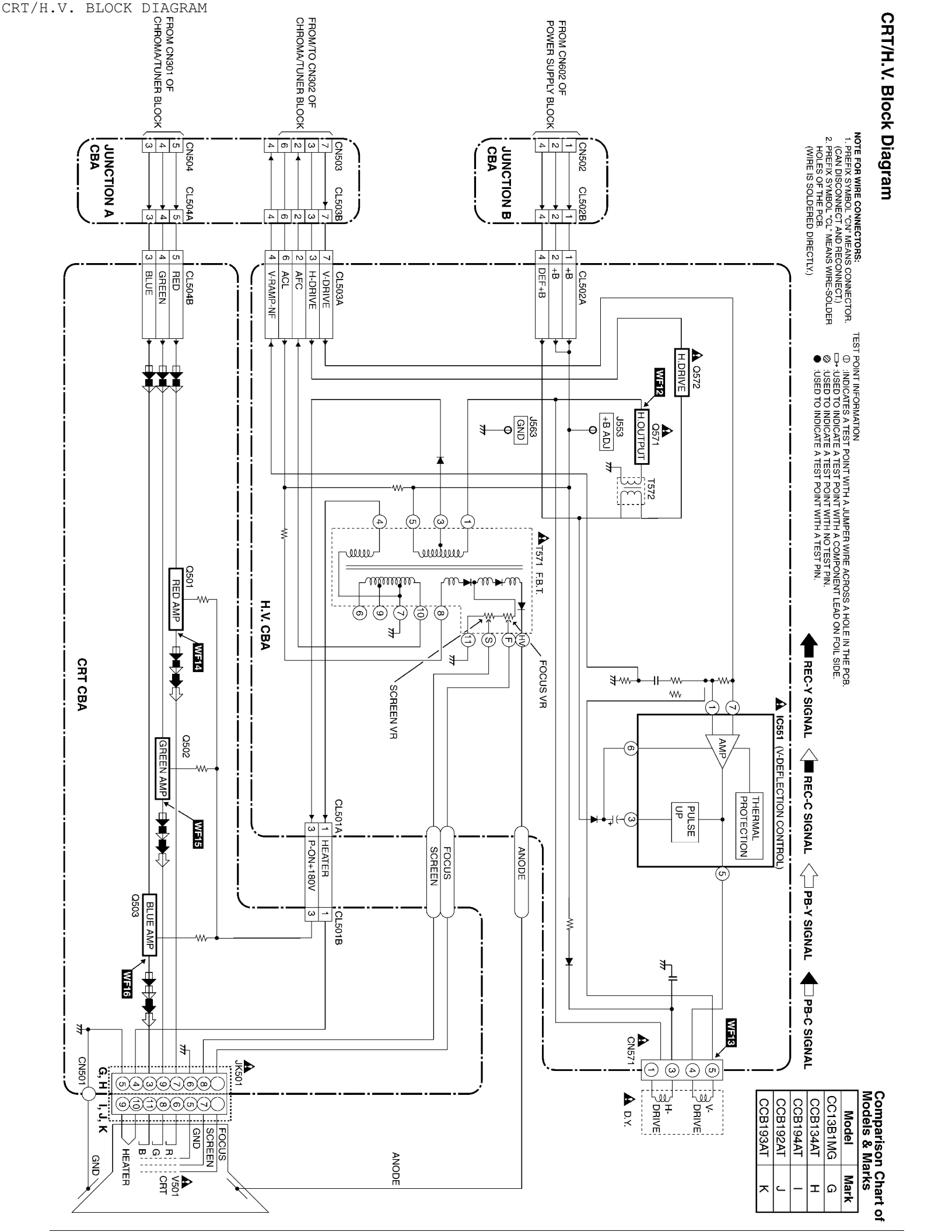
Chroma/Tuner Block Diagram

Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K



CRT/H.V. BLOCK DIAGRAM



Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

Power Supply Block Diagram

CC13B1, CCB134, CCB192
CCB193, CCB194

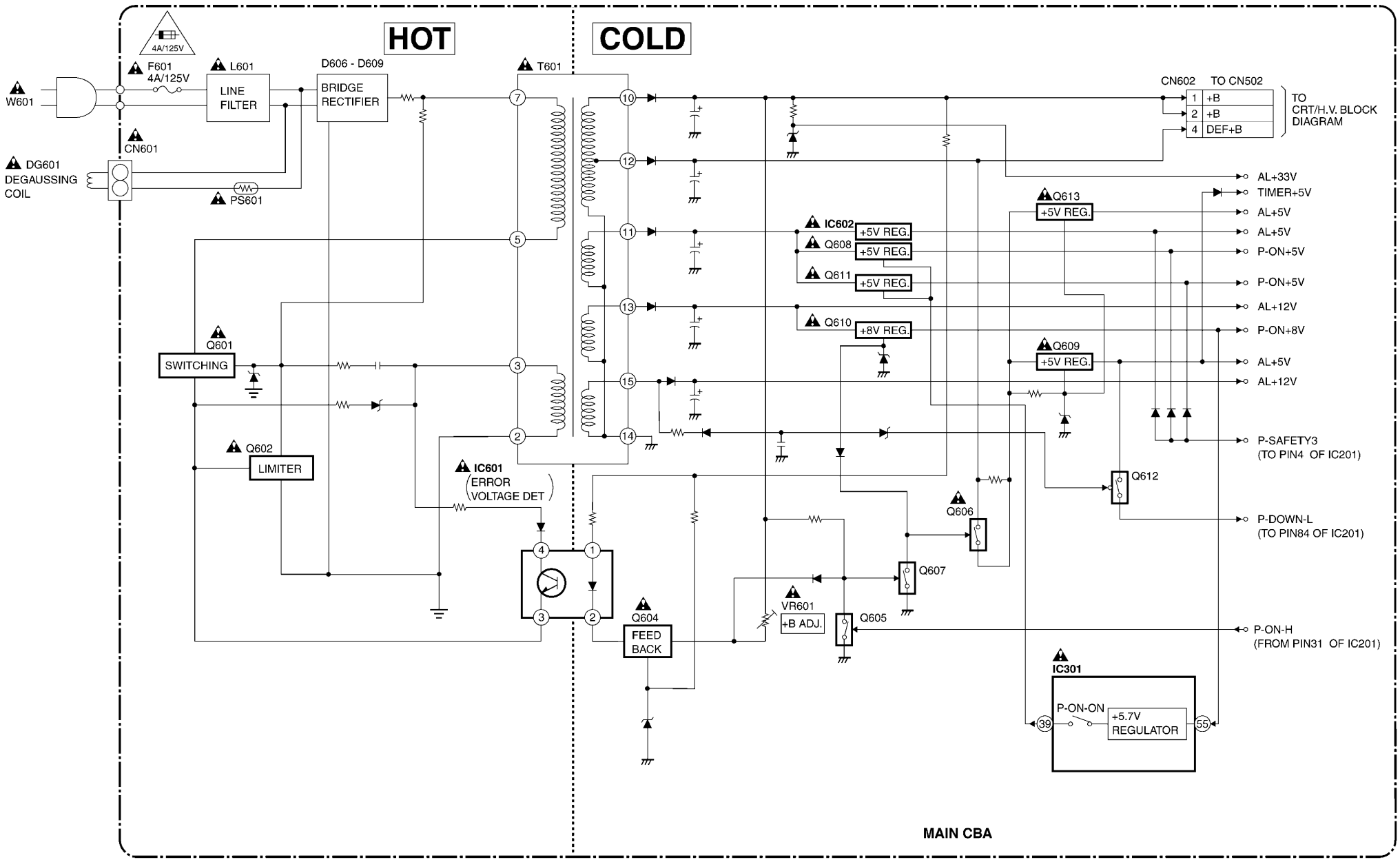
CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

4A/125V

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



POWER SUPPLY BLOCK DIAGRAM

Video Block Diagram (H, I, K)

NOTE FOR WIRE CONNECTORS:
1. PREFIX SYMBOL "CN" MEANS CONNECTOR. (CAN DISCONNECT AND RECONNECT.)
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB. (WIRE IS SOLDERED DIRECTLY.)

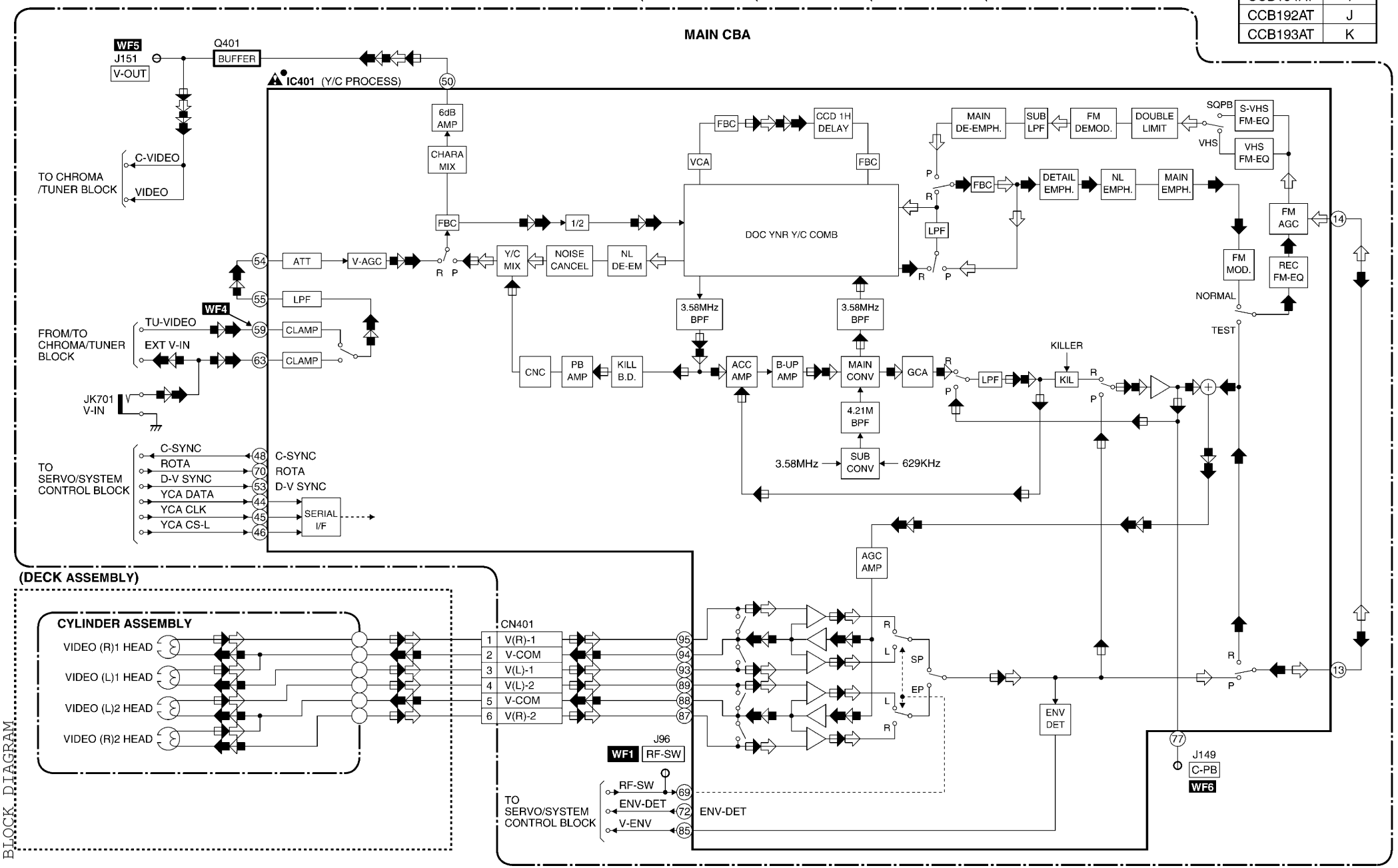
TEST POINT INFORMATION
- ⓘ :INDICATES A TEST POINT WITH A JUMPER WIRE ACROSS A HOLE IN THE PCB.
- ▭→ :USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
- ⊘ :USED TO INDICATE A TEST POINT WITH NO TEST PIN.
- ● :USED TO INDICATE A TEST POINT WITH A TEST PIN.

"● " = SMD

Comparison Chart of Models & Marks

Model	Mark
CC13B1MG	G
CCB134AT	H
CCB194AT	I
CCB192AT	J
CCB193AT	K

REC-Y SIGNAL | REC-C SIGNAL | PB-Y SIGNAL | PB-C SIGNAL | MODE: SP/REC



VIDEO BLOCK DIAGRAM

Philips Consumer Electronics

Technical Service Data

Service and Quality
Service Publications Dept.
One Philips Drive
P.O. Box 14810
Knoxville, TN 37914

Manual 5871
Model no.: CCB130AT01
First Publish: 4-25-2000
Rev. Date: 9-27-2000
Print Date: 3/16/05

Parts List

REFER TO SAFETY GUIDELINES

SAFETY NOTICE: ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

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Visit our World Wide Web Site at http://www.forceonline.com

DECK MECHANICAL PARTS

B9	MOVING GUIDE S PREPARATION MK9	4835 464 57557

MAIN CBA

	Main CBA	0000 ESA 03466
C006	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C007	ELECT 100mF/16V ±20%	4835 124 47033
C008	CER CAP.(AX) 56pF/50V ±5% (SL)	4835 122 47053
C009	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C010	ELECT 1mF/50V ±20% H7.	4835 124 47045
C011	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C202	CER CAP.(AX) 1000pF/50V ±10% (B) . . .	4835 122 47215
C207	CER CAP. (AX) 0.01mF/50V ±10% (B). . .	CCA1 JKT 0B103
C209	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C210	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C212	CER CAP.(AX) 1000pF/50V ±10% (B) . .	4835 122 47215
C216	ELECT 1mF/50V ±20%	4835 124 47045
C217	CER CAP.(AX) 0.022mF/50V ±30% (B). . .	4835 122 47013
C218	CER CAP.(AX) 20pF/50V ±5% (CH)	4835 122 47547
C219	CER CAP.(AX) 20pF/50V ±5% (CH)	4835 122 47547
C220	ELECT 220mF/6.3V ±20%.	4835 124 47168
C222	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C223	ELECT 47mF/35V ±20%.	4835 124 97066
C224	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C225	CER CAP.(AX) 2200pF/16V ±10% (X) . . .	4835 122 47437
C226	ELECT 1mF/50V ±20% H7.	4835 124 47045
C227	CER CAP.(AX) 1000pF/50V ±10% (B) . . .	4835 122 47215
C228	CER CAP.(AX) 560pF/50V ±5% (CH). . . .	4835 122 47206
C234	CER CAP.(AX) 100pF/50V ±10% (B). . . .	4835 122 47014
C235	CER CAP.(AX) 100pF/50V ±10% (B). . . .	4835 122 47014
C237	CER CAP.(AX) 6800pF/16V ±10% (X) . . .	4835 122 97078
C238	CER CAP.(AX) 0.047mF/50V ±10% (B). . .	4835 121 47681
C239	ELECT 22mF/16V ±20%.	4835 124 47175
C243	ELECT 22mF/50V ±20%.	4835 124 47051
C244	ELECT 47mF/35V ±20%.	4835 124 97066
C245	CER CAP.(AX) 0.022mF/50V ±30% (B). . .	4835 122 47013
C246	ELECT 22mF/16V ±20% LL	4835 124 47175
C248	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C249	ELECT 47mF/35V ±20%.	4835 124 97066
C250	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C251	ELECT 22mF/50V ±20%.	4835 124 47051
C252	CER CAP.(AX) 0.022mF/50V ±30% (B). . .	4835 122 47013
C254	ELECT 47mF/35V ±20%.	4835 124 97066
C255	CER CAP.(AX) 0.1mF/50V +80/-20% (F). .	4835 122 47162
C256	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C257	ELECT 47mF/6.3V ±20% H7.	4835 124 47154
C258	CER CAP.(AX) 0.047mF/16V +80/-20% (F).	4835 122 47603
C259	CER CAP.(AX) 0.022mF/25V +80/-20% (F).	4835 122 47214
C260	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C261	ELECT 47mF/16V ±20% H7	4835 124 47073
C262	CER CAP.(AX) 2200pF/50V ±5% (CH) . . .	4835 122 47007
C263	CER CAP.(AX) 2200pF/50V ±5% (CH) . . .	4835 122 47007
C264	CER CAP.(AX) 0.1mF/50V +80/-20% (F). .	4835 122 47162
C266	ELECT 47mF/35V ±20%.	4835 124 97066
C267	CER CAP.(AX) 10pF/50V ±5% (CH)	4835 122 47003
C268	CER CAP.(AX) 15pF/50V ±5% (CH)	4835 122 47085
C271	CER CAP.(AX) 0.022mF/50V ±30% (B). . .	4835 122 47013
C272	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C273	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C274	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C275	CER CAP.(AX) 1000pF/50V ±10% (B) . . .	4835 122 47215
C276	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47711
C301	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C303	ELECT 220mF/16V ±20%	4835 124 47081
C304	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C307	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C308	ELECT 1mF/50V ±20%	4835 124 47045
C311	ELECT 100mF/16V ±20%	4835 124 47033
C312	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C313	STACKED FILM CAP. 1.0mF/50 ±5%	4835 121 47688
C314	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C315	ELECT 100mF/16V ±20%	4835 124 47033
C317	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C318	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C319	ELECT 1mF/50V ±20%	4835 124 47045
C320	CER CAP.(AX) 1000pF/50V ±10% (B) . . .	4835 122 47215
C322	ELECT 1mF/50V ±20%	4835 124 47045
C323	SEMI CONDUTOR CAP. YK 0.015m/F50V ± 10% (Y).	4835 122 97009
C324	ELECT 1mF/50V ±20%	4835 124 47045
C325	ELECT 10mF/50V ±20%.	4835 124 47037
C330	ELECT 470mF/10V ±20%	4835 124 47286
C332	CER CAP.(AX) 0.022mF/50V ±30% (B). . .	4835 122 47013
C333	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C334	ELECT 4.7mF/50V ±20%	4835 124 47506
C335	ELECT 2.2mF/50V ±20%	4835 124 47049
C336	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C337	CER CAP.(AX) 3300pF/16V ±10% (Y) . . .	4835 122 47475
C338	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C339	ELECT 0.47mF/50V ±20%.	4835 124 47155
C340	ELECT 0.1mF/50V ±20%	4835 124 47048
C341	FILM CAP.(P) 0.047mF/50V ±5%	4835 121 47681
C342	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C354	ELECT 47mF/35V ±20%.	4835 124 97066
C355	CARBON RES. 1/4W ±5% 10Mohm.	4835 110 57288
C356	CER CAP. 680pF/50V ±5% (SL).	4835 122 47187
C358	ELECT 470mF/10V ±20%	4835 124 47286
C360	CER CAP.(AX) 47pF/50V ±5% (SL)	4835 122 37017
C362	CER CAP.(AX) 47pF/50V ±5% (SL)	4835 122 37017
C363	ELECT 47mF/35V ±20%.	4835 124 97066
C366	FILM CAP.(P) 0.1mF/50V ±5%	4835 122 47451
C401	ELECT 1mF/50V ±20% H7.	4835 124 47045
C402	CER CAP.(AX) 0.01mF/50V ±10% (B) . . .	CCA1 JKT 0B103
C403	CER CAP.(AX) 0.033mF/50V ±10% (B). . .	4835 121 47456
C404	ELECT 47mF/6.3V ±20% H7.	4835 124 47154
C405	ELECT 1mF/50V ±20% H7.	4835 124 47045
C406	CER CAP.(AX) 390pF/50V ±10% (B). . . .	4835 122 47041
C407	ELECT 1mF/50V ±20% H7.	4835 124 47045
C408	CER CAP.(AX) 18pF/50V ±5% (CH)	4835 122 47086
C409	CER CAP.(AX) 22pF/50V ±5% (SL)	4835 122 37016
C410	CER CAP.(AX) 180pF/50V ±5% (CH). . . .	4835 122 47369
C412	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C419	ELECT 0.1mF/50V ±20% H7.	4835 124 47048
C420	ELECT 1mF/50V ±20% H7.	4835 124 47045
C421	ELECT 1mF/50V ±20% H7.	4835 124 47045
C422	ELECT 1mF/50V ±20% H7.	4835 124 47045
C423	CER CAP.(AX) 0.1mF/50V +80/-20% (F). .	4835 122 47162
C425	ELECT 1000mF/6.3V ±20% H7.	4835 124 47263
C429	ELECT 1mF/50V ±20% H7.	4835 124 47045
C430	ELECT 3.3mF/50V ±20% H7.	4835 124 47052
C431	ELECT 1mF/50V ±20% H7.	4835 124 47045
C432	ELECT 10mF/16V ±20% H7	4835 124 47268
C433	ELECT 22mF/16V H7.	4835 124 47128
C434	ELECT 10mF/50V ±20%.	4835 124 47037
C435	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C436	ELECT 0.47mF/50V ±20% H7	4835 124 47155
C438	ELECT 0.1mF/50V ±20% H7.	4835 124 47048
C439	CER CAP.(AX) 0.033mF/16V (F).	4835 122 47288
C440	ELECT 47mF/6.3V ±20% H7.	4835 124 47154
C442	ELECT 1mF/50V ±20% H7.	4835 124 47045
C443	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C444	ELECT 1mF/50V ±20% H7.	4835 124 47045
C445	CER CAP.(AX) 5600pF/16V ±10% (X) . . .	4835 122 47486
C446	ELECT 1mF/50V ±20%	4835 124 47045
C447	CER CAP.(AX) 0.047mF/16V ±1% (Z) . . .	4835 122 47603
C450	ELECT 0.1mF/50V ±20% H7.	4835 124 47048
C452	CER CAP.(AX) 0.033mF/16V +80/-20% (F).	4835 122 47288
C453	ELECT 47mF/35V ±20%.	4835 124 97066
C455	ELECT 33mF/35V ±20%.	4835 124 47351
C456	ELECT 10mF/16V ±20%.	4835 124 47268
C457	ELECT 0.1mF/50V ±20%	4835 124 47048
C459	CER CAP.(AX) 68pF/50V ±5% (SL)	4835 122 47217
C468	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C469	CER CAP.(AX) 220pF/50V ±5% (CH). . . .	4835 122 47006
C470	CER CAP.(AX) 220pF/50V ±5% (CH). . . .	4835 122 47006
C471	CER CAP. 39pF/50V ±5% (CH)	4835 122 47051
C472	CER CAP.(AX) 0.033mF/50V ±10% (B). . .	4835 121 47456
C475	CER CAP. 5.6pF/50V ±10% (CH)	4835 122 47548
C476	CHIP CER CAP. 0.15mF/25V +80/-20% (F).	4835 122 47709
C478	CER CAP. 5.6pF/50V ±10% (CH)	4835 122 47548
C601	FILM CAP.(P) 0.033mF/50V ±5%	4835 121 47456
C602	FILM CAP.(P) 0.047mF/50V ±5%	4835 121 47681
C603	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
C604	FILM CAP.(P) 0.047mF/50V ±5%	4835 121 47681
C605	FILM CAP.(P) 0.018mF/50V ±5%	4822 121 42701
C606	ALUMINUM ELECTROLYTIC CAP150m/F200V. .	4835 124 97105
C607	CER CAP. LB 680pF/2kV.	4835 122 47514
C608	FILM CAP.(MP) 0.1m/F250V ±20%.	4835 121 47025
C610	CER CAP. 0.01mF/AC250V	4835 122 47502
C611	CER CAP. 0.01mF/AC250V	4835 122 47502
C612	CER CAP. 0.01mF/AC250V	4835 122 47502
C613	CER CAP. 0.01mF/AC250V	4835 122 47502
C615	ELECT 470mF/35V ±20%	4835 124 47069
C617	CER CAP.(AX) 68pF/50V ±5% (SL)	4835 122 47217
C618	FILM CAP.(P) 0.018mF/50V ±5%	4822 121 42701
C619	CER CAP. LB 470pF/2kV.	4835 122 47642
C620	ELECT 100mF/160V ±20%.	4835 124 47698
C621	ELECT 1000mF/16V ±20%.	4835 124 47005
C622	ELECT 470mF/16V ±20%	4835 220 17118
C623	ELECT 1000mF/16V ±20%.	4835 124 47005
C624	CERA±20%IC CAP.(AX) 0.01m/F50V ñ10% (B)	CCA1 JKT 0B103
C625	ELECT 1mF/50V ±20%	4835 124 47045
C626	ELECT 4.7mF/50V ±20%	4835 124 47506
C628	ELECT 10mF/50V ±20%.	4835 124 47037
C629	ELECT 47mF/35V ±20%.	4835 124 97066
C630	ELECT 220mF/6.3V ±20%.	4835 124 47168
C631	ELECT 100mF/16V ±20%	4835 124 47033
C632	ELECT 100mF/16V ±20%	4835 124 47033
C633	ELECT 47mF/35V ±20%.	4835 124 97066
C634	ELECT 100mF/16V ±20%	4835 124 47033
C635	ELECT 47mF/35V ±20%.	4835 124 97066
C636	SAFETY CAP. 4700pF/125V MX	4835 125 97035
C637	PCB JUMPER P10.0MM	0000 00J W10.0
C636	SAFETY CAP. 0.01m/F250V ±20% (F). . .	4835 125 97008

S = Safety Part Be sure to use exact replacement part.

C637	SAFETY CAP. 0.01m/F250V ±20% (F). . .	4835 125 97008
C641	CER CAP.(AX) 0.1mF/50V +80/-20%(F) . .	4835 122 47162
C801	ELECT 1000mF/16V ±20%.	4835 124 47005
C802	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C804	ELECT 330mF/16V ±20%	4835 124 47409
C807	ELECT 2.2mF/50V ±20%	4835 124 47049
C809	CER CAP.(AX) 5600pF/16V ±10% (X) . . .	4835 122 47486
C811	ELECT 10mF/50V ±20%.	4835 124 47037
C851	ELECT 47mF/35V ±20%.	4835 124 97066
C853	ELECT 220mF/6.3V ±20%.	4835 124 47168
C854	CER CAP. 470pF/100V ±10% (B).	4835 122 47691
C855	FILM CAP.(P) 0.018mF/50V ±5%	4822 121 42701
C856	CER CAP.(AX) 560pF/50V ±5% (CH). . . .	4835 122 47206
C857	CER CAP.(AX) 2700pF/50V ±10% (B) . . .	4835 122 37024
C858	ELECT 10mF/35V ±20% H7	4835 124 47009
C859	ELECT 22mF/16V ±20% H7	4835 124 47128
C860	SEMI CAP 0.012m/F25V ±10% (YR)	4835 122 97085
C861	ELECT 1mF/50V ±20% H7.	4835 124 47045
C863	ELECT 1mF/50V ±20% H7.	4835 124 47045
C864	ELECT 22mF/50V ±20%.	4835 124 47051
C865	CER CAP.(AX) 0.033mF/50V ±10% (B). . .	4835 121 47456
C866	ELECT 47mF/35V ±20%.	4835 124 97066
C867	ELECT 0.1mF/50V ±20%	4835 124 47048
C868	ELECT 4.7mF/50V ±20%	4835 124 47506
C869	CER CAP.(AX) CH J 1000pF/50V	4835 122 47004
CN201	CONNECTOR 8P TMC-J08P-A1	J3TM A08 TG002
CN202	FE CONNECTOR TOP 7P 07FE-BT-VK-N . . .	JCFE J07 JG001
CN301	CONNECTOR BASE 5P TUC-P05P-B1.	J3TU A05 TG001
CN302	CONNECTOR BASE 7P TUC-P07P-B1.	J3TU A07 TG001
CN303	CONNECTOR BASE 5P TUC-P05P-B1.	J3TU A05 TG001
CN401	FE CONNECTOR TOP 4P 04FE-BT-VK-N . . .	JCFE J04 JG001
CN402	FE CONNECTOR TOP 9P 09FE-BT-VK-N . . .	JCFE J09 JG001
CN403	CABLE CONNECTOR 2P TMC-E02X-A1	4835 263 97018
CN601	CONNECTOR BASE 2P RTB-1.5-2P	J3RT C02 JG001
CN602	CONNECTOR BASE 6P TUC-P06P-B1.	J3TU A06 TG001
CN801	STRAIGHT CONNECTOR BASE.	J383 C02 UG002
D003	SWITCHING DIODE 1N4148	4835 130 37048
D201	ZENER DIODE MTZJT-775.6B	4835 130 37329
D203	ZENER DIODE MTZJT-775.6B	4835 130 37329
D205	LED SIR-563ST3F P.	4835 130 87163
D206	LED LTL-4214M1	4835 130 87149
D210	ZENER DIODE MTZJT-775.6B	4835 130 37329
D211	ZENER DIODE MTZJT-776.8B	4835 130 37881
D223	ZENER DIODE MTZJT-775.6B	4835 130 37329
D224	ZENER DIODE MTZJT-775.6B	4835 130 37329
D225	ZENER DIODE MTZJT-775.6B	4835 130 37329
D226	ZENER DIODE MTZJT-775.6B	4835 130 37329
D302	ZENER DIODE MTZJT-778.2B	4835 130 37963
D303	ZENER DIODE MTZJT-778.2B	4835 130 37963
D304	ZENER DIODE MTZJT-778.2B	4835 130 37963
D309	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D312	ZENER DIODE MTZJT-778.2B	4835 130 37963
D315	SWITCHING DIODE 1N4148	4835 130 37048
D316	ZENER DIODE MTZJT-775.6B	4835 130 37329
D317	ZENER DIODE MTZJT-775.6B	4835 130 37329
D318	ZENER DIODE MTZJT-7712B.	4835 130 37705
D320	ZENER DIODE MTZJT-7712B.	4835 130 37705
D321	SWITCHING DIODE 1N4148	4835 130 37048
D601	ZENER DIODE MTZJT-775.6B	4835 130 37329
D602	SWITCHING DIODE 1N4148	4835 130 37048
D603	ZENER DIODE MTZJT-7720C.	4835 130 37983
D604	SWITCHING DIODE 1N4148	4835 130 37048
D606	RECTIFIER DIODE ERB12-06	4835 130 37897
D607	RECTIFIER DIODE ERB12-06	4835 130 37897
D608	RECTIFIER DIODE ERB12-06	4835 130 37897
D609	RECTIFIER DIODE ERB12-06	4835 130 37897
D612	ZENER DIODE MTZJT-776.8B	4835 130 37881
D613	RECOVERY DIODE ERC18-04.	4835 130 37994
D614	RECTIFIER DIODE ERA22-02	4835 130 37788
D615	DIODE 1ZC33.	4835 130 37958
D616	SCHOTTKY BARRIER DIODE ERA81-004 . . .	4835 130 37211
D617	SCHOTTKY BARRIER DIODE ERA81-004 . . .	4835 130 37211
D618	SWITCHING DIODE 1N4148	4835 130 37048
D619	SWITCHING DIODE 1N4148	4835 130 37048
D620	RECTIFIER DIODE ERA22-02	4835 130 37788
D621	SWITCHING DIODE 1N4148	4835 130 37048
D622	SWITCHING DIODE 1N4148	4835 130 37048
D623	SWITCHING DIODE 1N4148	4835 130 37048
D624	SWITCHING DIODE 1N4148	4835 130 37048
D625	ZENER DIODE MTZJT-7736A.	4835 130 37785
D628	ZENER DIODE MTZJT-7713B.	4822 130 83165
D629	SWITCHING DIODE 1N4148	4835 130 37048
D630	SWITCHING DIODE 1N4148	4835 130 37048
D631	ZENER DIODE MTZJT-778.2B	4835 130 37963
D632	SWITCHING DIODE 1N4148	4835 130 37048
D633	SWITCHING DIODE 1N4148	4835 130 37048
D634	SWITCHING DIODE 1N4148	4835 130 37048
D635	SWITCHING DIODE 1N4148	4835 130 37048
D636	SWITCHING DIODE 1N4148	4835 130 37048
D637	SWITCHING DIODE 1N4148	4835 130 37048
D639	SWITCHING DIODE 1N4148	4835 130 37048
D641	ZENER DIODE MTZJT-776.8A	4835 130 37971
D644	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D646	ZENER DIODE MTZJT-7720C.	4835 130 37983
D803	SWITCHING DIODE 1N4148	4835 130 37048

C641	CER CAP.(AX) 0.1mF/50V +80/-20%(F) . .	4835 122 47162
C801	ELECT 1000mF/16V ±20%.	4835 124 47005
C802	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552
C804	ELECT 330mF/16V ±20%	4835 124 47409
C807	ELECT 2.2mF/50V ±20%	4835 124 47049
C809	CER CAP.(AX) 5600pF/16V ±10% (X) . . .	4835 122 47486
C811	ELECT 10mF/50V ±20%.	4835 124 47037
C851	ELECT 47mF/35V ±20%.	4835 124 97066
C853	ELECT 220mF/6.3V ±20%.	4835 124 47168
C854	CER CAP. 470pF/100V ±10% (B).	4835 122 47691
C855	FILM CAP.(P) 0.018mF/50V ±5%	4822 121 42701
C856	CER CAP.(AX) 560pF/50V ±5% (CH). . . .	4835 122 47206
C857	CER CAP.(AX) 2700pF/50V ±10% (B) . . .	4835 122 37024
C858	ELECT 10mF/35V ±20% H7	4835 124 47009
C859	ELECT 22mF/16V ±20% H7	4835 124 47128
C860	SEMI CAP 0.012m/F25V ±10% (YR)	4835 122 97085
C861	ELECT 1mF/50V ±20% H7.	4835 124 47045
C863	ELECT 1mF/50V ±20% H7.	4835 124 47045
C864	ELECT 22mF/50V ±20%.	4835 124 47051
C865	CER CAP.(AX) 0.033mF/50V ±10% (B). . .	4835 121 47456
C866	ELECT 47mF/35V ±20%.	4835 124 97066
C867	ELECT 0.1mF/50V ±20%	4835 124 47048
C868	ELECT 4.7mF/50V ±20%	4835 124 47506
C869	CER CAP.(AX) CH J 1000pF/50V	4835 122 47004
CN201	CONNECTOR 8P TMC-J08P-A1	J3TM A08 TG002
CN202	FE CONNECTOR TOP 7P 07FE-BT-VK-N . . .	JCFE J07 JG001
CN301	CONNECTOR BASE 5P TUC-P05P-B1.	J3TU A05 TG001
CN302	CONNECTOR BASE 7P TUC-P07P-B1.	J3TU A07 TG001
CN303	CONNECTOR BASE 5P TUC-P05P-B1.	J3TU A05 TG001
CN401	FE CONNECTOR TOP 4P 04FE-BT-VK-N . . .	JCFE J04 JG001
CN402	FE CONNECTOR TOP 9P 09FE-BT-VK-N . . .	JCFE J09 JG001
CN403	CABLE CONNECTOR 2P TMC-E02X-A1	4835 263 97018
CN601	CONNECTOR BASE 2P RTB-1.5-2P	J3RT C02 JG001
CN602	CONNECTOR BASE 6P TUC-P06P-B1.	J3TU A06 TG001
CN801	STRAIGHT CONNECTOR BASE.	J383 C02 UG002
D003	SWITCHING DIODE 1N4148	4835 130 37048
D201	ZENER DIODE MTZJT-775.6B	4835 130 37329
D203	ZENER DIODE MTZJT-775.6B	4835 130 37329
D205	LED SIR-563ST3F P.	4835 130 87163
D206	LED LTL-4214M1	4835 130 87149
D210	ZENER DIODE MTZJT-775.6B	4835 130 37329
D211	ZENER DIODE MTZJT-776.8B	4835 130 37881
D223	ZENER DIODE MTZJT-775.6B	4835 130 37329
D224	ZENER DIODE MTZJT-775.6B	4835 130 37329
D225	ZENER DIODE MTZJT-775.6B	4835 130 37329
D226	ZENER DIODE MTZJT-775.6B	4835 130 37329
D302	ZENER DIODE MTZJT-778.2B	4835 130 37963
D303	ZENER DIODE MTZJT-778.2B	4835 130 37963
D304	ZENER DIODE MTZJT-778.2B	4835 130 37963
D309	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D312	ZENER DIODE MTZJT-778.2B	4835 130 37963
D315	SWITCHING DIODE 1N4148	4835 130 37048
D316	ZENER DIODE MTZJT-775.6B	4835 130 37329
D317	ZENER DIODE MTZJT-775.6B	4835 130 37329
D318	ZENER DIODE MTZJT-7712B.	4835 130 37705
D320	ZENER DIODE MTZJT-7712B.	4835 130 37705
D321	SWITCHING DIODE 1N4148	4835 130 37048
D601	ZENER DIODE MTZJT-775.6B	4835 130 37329
D602	SWITCHING DIODE 1N4148	4835 130 37048
D603	ZENER DIODE MTZJT-7720C.	4835 130 37983
D604	SWITCHING DIODE 1N4148	4835 130 37048
D606	RECTIFIER DIODE ERB12-06	4835 130 37897
D607	RECTIFIER DIODE ERB12-06	4835 130 37897
D608	RECTIFIER DIODE ERB12-06	4835 130 37897
D609	RECTIFIER DIODE ERB12-06	4835 130 37897
D612	ZENER DIODE MTZJT-776.8B	4835 130 37881
D613	RECOVERY DIODE ERC18-04.	4835 130 37994
D614	RECTIFIER DIODE ERA22-02	4835 130 37788
D615	DIODE 1ZC33.	4835 130 37958
D616	SCHOTTKY BARRIER DIODE ERA81-004 . . .	4835 130 37211
D617	SCHOTTKY BARRIER DIODE ERA81-004 . . .	4835 130 37211
D618	SWITCHING DIODE 1N4148	4835 130 37048
D619	SWITCHING DIODE 1N4148	4835 130 37048
D620	RECTIFIER DIODE ERA22-02	4835 130 37788
D621	SWITCHING DIODE 1N4148	4835 130 37048
D622	SWITCHING DIODE 1N4148	4835 130 37048
D623	SWITCHING DIODE 1N4148	4835 130 37048
D624	SWITCHING DIODE 1N4148	4835 130 37048
D625	ZENER DIODE MTZJT-7736A.	4835 130 37785
D628	ZENER DIODE MTZJT-7713B.	4822 130 83165
D629	SWITCHING DIODE 1N4148	4835 130 37048
D630	SWITCHING DIODE 1N4148	4835 130 37048
D631	ZENER DIODE MTZJT-778.2B	4835 130 37963
D632	SWITCHING DIODE 1N4148	4835 130 37048
D633	SWITCHING DIODE 1N4148	4835 130 37048
D634	SWITCHING DIODE 1N4148	4835 130 37048
D635	SWITCHING DIODE 1N4148	4835 130 37048
D636	SWITCHING DIODE 1N4148	4835 130 37048
D637	SWITCHING DIODE 1N4148	4835 130 37048

S = Safety Part Be sure to use exact replacement part.

D639	SWITCHING DIODE 1N4148	4835 130 37048
D641	ZENER DIODE MTZJT-776.8A	4835 130 37971
D644	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D646	ZENER DIODE MTZJT-7720C	4835 130 37983
D803	SWITCHING DIODE 1N4148	4835 130 37048
D637	SWITCHING DIODE 1N4148	4835 130 37048
D639	SWITCHING DIODE 1N4148	4835 130 37048
D641	ZENER DIODE MTZJT-776.8A	4835 130 37971
D644	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D646	ZENER DIODE MTZJT-7720C	4835 130 37983
D803	SWITCHING DIODE 1N4148	4835 130 37048
IC201	MICRO COMPUTER 16BIT M37760MCH2A4GP	4835 209 17653
IC202	IC:MEMORY AT24C02N-10SC	4835 209 47434
IC203	IC LB11880	4835 209 47504
IC204	PHOTO INTERRUPTER RPI-302	4835 130 48192
IC301	IC:CHROMA/IF 1 CHIP M61203CFP	4835 209 47501
IC401	IC:Y/C/A LA71081M	4835 209 47511
IC601	PHOTOCOUPLER LTV-817B-F	4835 130 37977
IC602	IC:VOLTAGE REGULATOR AN7805F	4835 209 87259
IC801	AUDIO AMP LA4524L	4835 209 47502
L001	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L002	INDUCTOR 18mH-J-26T	4835 157 58179
L031	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L201	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L202	INDUCTOR 0.10mH-K-26T	4835 157 58236
L203	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L301	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L302	INDUCTOR 15mH-J-26T	4835 157 57753
L303	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L305	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L306	CARBON RES. 1/4W J 12ohm	4835 110 57252
L307	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L308	INDUCTOR 2.2mH-J-26T	4835 157 57639
L309	INDUCTOR 6.8mH-J-26T	4835 157 58207
L402	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
L403	CHOKE COIL 47mH-K	4835 157 58208
L404	INDUCTOR 100mH-J-26T	4835 157 57644
L405	INDUCTOR 22mH-J-26T	4835 157 57641
L410	INDUCTOR 2.2mH-J-26T	4835 157 57639
L601	LINE FILTER 5.0mH 6Y075	4835 154 97202
L851	INDUCTOR 47mH-K-5FT	4835 157 57375
Q201	PHOTO END SENSOR ST-304L-A	4835 130 48193
Q202	PHOTO START SENSOR ST-304L-A	4835 130 48193
Q203	SWITCHINGKTC3199(GR) NPN	4835 130 47914
Q206	RESETKTC3199(GR) NPN	4835 130 47914
Q301	BUFFERKTC3199(GR) NPN	4835 130 47914
Q302	AMPKTC3199(GR) NPN	4835 130 47914
Q303	SWITCHING 2SC3468(D)-AE NPN	4835 130 47981
Q401	BUFFERKTA1267(GR) PNP	4835 130 47913
Q402	BUFFERKTC3193 (Y) NPN	4835 130 48016
Q403	BUFFERKTC3195 (Y) NPN	4835 130 48198
Q404	BUFFERKTC3195 (Y) NPN	4835 130 48016
Q404	BUFFERKTC3193 (Y) NPN	4835 130 48016
Q601	MOS FET 2SK2876-54MR	4835 130 48194
Q602	LIMITER 2SC2120-Y-TPE2 NPN	4835 130 48047
Q604	FEED BACKKTC3199(GR) NPN	4835 130 47914
Q605	SWITCHINGKTC3199(GR) NPN	4835 130 47914
Q606	SWITCHING 2SA950(Y) PNP	4835 130 47576
Q607	SWITCHINGKTC3199(GR) NPN	4835 130 47914
Q608	+5V REGULATOR 2SC2120-Y-TPE2 NPN	4835 130 48047
Q609	+5V REGULATOR 2SC2120(Y) NPN	4835 130 48047
Q610	+8V REGULATORKTC3199(GR) NPN	4835 130 47914
Q611	+5V REGULATOR 2SD400(F) NPN	4835 130 47433
Q612	RES. BUILT-IN SWITCHINGKRA103M PNP	4835 130 47907
Q613	+5V REGULATORKTC3199(GR) NPN	4835 130 47914
Q801	AUTO MUTEKTC3199(GR) NPN	4835 130 47914
Q851	SWITCHING 2SA608NF-NPA-AT PNP	4835 130 47415
Q852	BIAS OSC 2SC2120-Y-TPE2 NPN	4835 130 48047
Q853	RES. BUILT-IN TRANSISTORKRA103M PNP	4835 130 47907
Q854	SWITCHING 2SC3331(T) NPN	4835 130 47549
Q855	SWITCHING 2SC3331(T) NPN	4835 130 47549
R001	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R003	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R004	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R005	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R032	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R201	CARBON RES. 1/4W ±2% 4.7kohm	4835 110 57278
R202	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R203	CARBON RES. 1/4W ±2% 680ohm	4835 110 57054
R204	CARBON RES. 1/4W ±2% 1.8kohm	4835 110 57033
R205	CARBON RES. 1/4W ±2% 3.9kohm	4835 110 57049
R206	CARBON RES. 1/4W ±2% 6.8kohm	4835 110 57268
R207	CARBON RES. 1/4W ±2% 22kohm	4835 110 57283
R208	CARBON RES. 1/4W ±2% 33kohm	4835 110 57211
R209	CARBON RES. 1/4W ±5% 22kohm	4835 110 57038
R210	CARBON RES. 1/4W ±5% 22kohm	4835 110 57038
R211	CARBON RES. 1/4W ±5% 22kohm	4835 110 57038
R212	CARBON RES. 1/4W ±5% 10kohm	4835 110 57026
R213	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R214	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R215	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R216	CARBON RES. 1/4W ±5% 2.7kohm	4835 110 57006
R217	CARBON RES. 1/4W ±5% 10kohm	4835 110 57026
R218	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R219	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R220	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R221	CARBON RES. 1/4W ±5% 2.7kohm	4835 110 57006
R222	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R223	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R224	CARBON RES. 1/4W ±5% 390kohm	4835 110 57263
R225	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R226	CARBON RES. 1/4W ±5% 390kohm	4835 110 57263
R227	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R230	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R231	CARBON RES. 1/4W ±5% 10kohm	4835 110 57026
R232	CARBON RES. 1/4W ±5% 390ohm	4835 110 57048
R233	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R234	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R235	CARBON RES. 1/4W ±5% 390ohm	4835 110 57048
R237	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R239	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R240	CARBON RES. 1/4W ±5% 47ohm	4835 110 57019
R241	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R242	CARBON RES. 1/4W ±5% 1.2kohm	4835 110 57027
R243	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R244	CARBON RES. 1/4W ±5% 470kohm	4835 110 57225
R245	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R246	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R247	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R248	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R249	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R250	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R251	CARBON RES. 1/4W ±5% 1Mohm	4835 110 57272
R252	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R254	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R255	CARBON RES. 1/4W ±5% 820ohm	4835 110 57059
R256	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R257	CARBON RES. 1/4W ±5% 3.3kohm	4835 110 57046
R258	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R259	CARBON RES. 1/4W ±5% 3.3kohm	4835 110 57046
R260	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R261	CARBON RES. 1/4W ±5% 3.3kohm	4835 110 57046
R262	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R263	CARBON RES. 1/4W ±5% 220ohm	4835 110 57037
R264	CARBON RES. 1/4W ±5% 220ohm	4835 110 57037
R267	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R268	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R269	CARBON RES. 1/4W ±5% 39kohm	4835 110 57262
R270	CARBON RES. 1/4W ±5% 220kohm	4835 110 57208
R274	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R275	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R276	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R277	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R278	CARBON RES. 1/4W ±5% 22kohm	4835 110 57038
R279	CARBON RES. 1/4W ±5% 680ohm	4835 110 57054
R280	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R281	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R282	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R283	CARBON RES. 1/4W ±5% 0.47ohm	4835 110 57343
R284	CARBON RES. 1/4W ±5% 68kohm	4835 110 57168
R285	CARBON RES. 1/4W ±5% 180ohm	4835 110 57219
R286	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R287	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R288	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R289	CARBON RES. 1/4W ±5% 1.8kohm	4835 110 57033
R290	CARBON RES. 1/4W ±5% 560kohm	4835 110 57053
R291	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R292	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R293	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R294	CARBON RES. 1/4W ±5% 470ohm	4835 110 57167
R295	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R296	CARBON RES. 1/4W ±5% 560ohm	4835 110 57052
R297	CARBON RES. 1/4W ±5% 10kohm	4835 110 57026
R301	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R302	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R303	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R305	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R307	CARBON RES. 1/4W ±5% 2.7kohm	4835 110 57006
R308	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R309	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R312	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R313	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R314	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R315	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R316	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R317	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003
R318	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R319	CARBON RES. 1/4W ±5% 18kohm	4835 110 57034
R321	CARBON RES. 1/4W ±5% 120kohm	4835 110 57029
R322	CARBON RES. 1/4W ±5% 15kohm	4835 110 57032
R323	CARBON RES. 1/4W ±5% 180kohm	4835 110 57259
R326	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R329	CARBON RES. 1/4W ±5% 10kohm	4835 110 57026
R332	CARBON RES. 1/4W ±5% 100ohm	4835 110 57003

S = Safety Part Be sure to use exact replacement part.

R333	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R334	CARBON RES. 1/4W ±5% 220ohm.	4835 110 57037
R335	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R336	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R337	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R341	CARBON RES. 1/4W ±5% 330ohm.	4835 110 57045
R342	CARBON RES. 1/4W ±5% 470ohm.	4835 110 57167
R348	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R349	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R351	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R352	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R353	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R354	CARBON RES. 1/4W ±5% 470ohm.	4835 110 57167
R355	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R356	CARBON RES. 1/4W ±5% 270ohm.	4835 110 57041
R359	CARBON RES. 1/4W ±5% 1Mohm	4835 110 57272
R360	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R401	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R402	CARBON RES. 1/4W ±5% 12kohm.	4835 110 57282
R403	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R406	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R407	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R416	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R417	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R418	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R419	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R420	CARBON RES. 1/4W ±5% 330ohm.	4835 110 57045
R421	CARBON RES. 1/4W ±5% 330ohm.	4835 110 57045
R422	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R423	CARBON RES. 1/4W ±5% 1.2kohm	4835 110 57027
R424	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R425	CARBON RES. 1/4W ±5% 8.2kohm	4835 110 57264
R427	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R432	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R439	CARBON RES. 1/4W ±5% 4.7Mohm	4835 110 57298
R444	CARBON RES. 1/4W ±5% 4.7Mohm	4835 110 57298
R445	CARBON RES. 1/4W ±5% 220ohm.	4835 110 57037
R457	CARBON RES. 1/4W ±5% 15kohm.	4835 110 57032
R458	CARBON RES. 1/4W ±5% 33kohm.	4835 110 57211
R459	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R460	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R461	CARBON RES. 1/4W ±5% 3.3kohm	4835 110 57046
R462	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R463	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R464	CARBON RES. 1/4W ±5% 470kohm	4835 110 57225
R465	CARBON RES. 1/4W ±5% 3.9kohm	4835 110 57049
R601	CARBON RES. 1/4W ±5% 150ohm.	4835 110 57031
R602	CARBON RES. 1/4W ±5% 150ohm.	4835 110 57031
R603	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R604	CARBON RES. 1/4W ±5% 1.5ohm.	4835 110 57074
R605	CARBON RES. 1/4W ±5% 330ohm.	4835 110 57045
R606	CARBON RES. 1/4W ±5% 1Mohm	4835 110 57272
R607	CARBON RES. 1/4W ±5% 1Mohm	4835 110 57272
R608	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R609	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R610	CARBON RES. 1/4W ±5% 1.2kohm	4835 110 57027
R611	CEMENT RES. 5W ±10% 1.2ohm	4835 113 87008
R612	CARBON RES. 1/2W ±5% 3.3Mohm	4835 110 47117
R613	CARBON RES. 1/4W ±5% 220ohm.	4835 110 57037
R614	CARBON RES. 1/4W ±5% 270ohm.	4835 110 57041
R615	CEMENT RES. 5W ±5% 3.3kohm	4835 113 87023
R616	CARBON RES. 1/4W ±5% 15kohm.	4835 110 57032
R617	CARBON RES. 1/4W ±5% 15kohm.	4835 110 57032
R618	CARBON RES. 1/4W ±5% 22ohm	4835 110 57036
R619	CARBON RES. 1/4W ±5% 180ohm.	4835 110 57219
R620	CARBON RES. 1/4W ±5% 33kohm.	4835 110 57211
R621	CARBON RES. 1/4W ±5% 39kohm.	4835 110 57262
R622	CARBON RES. 1/4W ±5% 39kohm.	4835 110 57262
R624	CARBON RES. 1/4W ±5% 12kohm.	4835 110 57282
R625	CARBON RES. 1/4W ±5% 12kohm.	4835 110 57282
R626	CARBON RES. 1/4W ±5% 15kohm.	4835 110 57032
R627	CARBON RES. 1/4W ±5% 470ohm.	4835 110 57167
R628	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R631	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R632	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R633	FIXED METAL OXIDE FILM RES. 2W ±5% 680ohm.	4835 116 57161
R634	CARBON RES. 1/4W ±5% 56kohm.	4835 110 57213
R635	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R636	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
R637	CARBON RES. 1/4W ±5% 47kohm.	4835 110 57189
R638	CARBON RES. 1/4W ±5% 220ohm.	4835 110 57037
R639	FIXED METAL OXIDE FILM RES. 1W ±5% 47oh	4835 116 67104
R640	FIXED METAL OXIDE FILM RES. 1W ±5% 47oh	4835 116 67104
R641	CARBON RES. 1/2W ±5% 5.6ohm.	4835 116 57595
R643	CARBON RES. 1/4W ±5% 68ohm	4835 110 57248
R644	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R645	CARBON RES. 1/4W ±5% 560ohm.	4835 110 57052
R646	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R647	CARBON RES. 1/2W ±5% 10ohm	4835 110 47102
R648	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R649	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R650	FIXED METAL OXIDE FILM RES. 2W ±5% 10oh	4835 116 67126
R651	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R653	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R654	FIXED METAL OXIDE FILM RES. 2W ±5% 0.39ohm.	4835 116 57791
R659	CARBON RES. 1/4W ±5% 1.2kohm	4835 110 57027
R660	CARBON RES. 1/4W ±5% 560ohm.	4835 110 57052
R661	CARBON RES. 1/4W ±5% 39ohm	4835 110 57188
R662	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R701	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R702	CARBON RES. 1/4W ±5% 75ohm	4835 110 57056
R703	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R752	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R801	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R802	FIXED METAL OXIDE FILM RES. 1W ±5% 12oh	4835 116 57639
R803	CARBON RES. 1/4W ±5% 47ohm	4835 110 57019
R804	CARBON RES. 1/4W ±5% 47ohm	4835 110 57019
R808	CARBON RES. 1/4W ±5% 3.3kohm	4835 110 57046
R810	CARBON RES. 1/4W ±5% 15kohm.	4835 110 57032
R812	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R851	CARBON RES. 1/4W ±5% 680ohm.	4835 110 57054
R852	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R854	CARBON RES. 1/4W ±5% 47kohm.	4835 110 57189
R855	CARBON RES. 1/4W ±5% 100ohm.	4835 110 57003
R856	CARBON RES. 1/4W ±5% 820ohm.	4835 110 57059
R857	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R858	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R859	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R860	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R861	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R862	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R863	CARBON RES. 1/4W ±5% 39kohm.	4835 110 57262
R864	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R867	CARBON RES. 1/4W ±5% 39kohm.	4835 110 57262
R868	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
SW201	TACT SWITCH SKHHAM	4835 276 17322
SW202	TACT SWITCH SKHHAM	4835 276 17322
SW203	TACT SWITCH SKHHAM	4835 276 17322
SW204	TACT SWITCH SKHHAM	4835 276 17322
SW205	TACT SWITCH SKHHAM	4835 276 17322
SW206	TACT SWITCH SKHHAM	4835 276 17322
SW207	TACT SWITCH SKHHAM	4835 276 17322
SW208	TACT SWITCH SKHHAM	4835 276 17322
SW209	TACT SWITCH SKHHAM	4835 276 17322
SW210	TACT SWITCH SKHHAM	4835 276 17322
SW211	PUSH SWITCH SPPB610301	4835 276 17213
SW212	ROTARY MODE SWITCH HMW0650-010010. . .	4835 276 17343
T601	SWITCHING TRANS SA-90801	4835 148 87396
T601	SWITCHING TRANS 9A03	4835 148 87395
VR601	CARBON P.O.T. 10kohm B	4835 100 97516
X201	CRYSTAL OSCILLATOR 32.768kHz	4835 242 77091
X202	CRYSTAL :OSCILLATOR 10.6MHz S8562. . .	4835 242 77326
X301	CRYSTAL OSCILLATOR 3.579545 MHz. . . .	FXD3 55L LN003
X401	CRYSTAL OSCILLATOR 3.579545MHz	4835 242 77093
BC601	BEAD INDUCTOR FBR07HA121TB-00.	LLBF 00Z TU021
BC603	BEAD INDUCTOR FBR07HA121TB-00.	LLBF 00Z TU021
BC604	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
BC605	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
BC606	BEAD INDUCTOR FBR07HA121TB-00.	LLBF 00Z TU021
BC607	BEAD INDUCTOR FBR07HA121TB-00.	LLBF 00Z TU021
CF301	CER FILTER 4.5MHz.	4835 153 97041
CF302	CER TRAP 4.5MHz.	4835 153 97048
CL802	WIRE ASSEMBLY 2P/150	WX1B 590 0-001
F601	FUSE TDS4A125VU/C.	4835 253 97153
FH601	FUSE HOLDER FH-V-03078	XH01 Z00 DK001
FH602	FUSE HOLDER FH-V-03078	XH01 Z00 DK001
JK701	RCA JACK(YELLOW) MSP-281V4-B	4835 265 97402
JK702	RCA JACK(WHITE) MSP-281V1-B.	4835 265 97401
JK801	EARPHONE JACK HTJ-035-1ZEBTZ	4835 265 97306
PS601	POSISTER ZPB45BL7R0A	QNZZ 45B L7R0A
RS201	REMOTE RECEIVER NJL65V367S	4835 210 27053
SA601	SURGE ABSORBER JVR-07N471K	4835 252 27024
SF001	SAW FILTER TSF5229P.	4835 153 97062
SG601	PCB JUMPER D0.6-P7.5	0000 00J W7.5T
SG602	GAP. G3.10D.	4835 252 27023
TB6	BUSH LED(E) H1600UD.	0000 VM4 08832
TB7	LED HOLDER T5100UA	0000 EM4 05410
W601	AC CORDohmAC0172AS006.	4835 321 17153
WH501A	WIRE HOLDER 3P HWT0200-03.	XW0H T03 C7001
WH502A	WIRE HOLDER 6P HWT0200-06.	XW0H T06 C7001
WH503A	WIRE HOLDER 7P HWT0200-07.	XW0H T07 C7001
WH504A	WIRE HOLDER 5P HWT0200-05.	XW0H T05 C7001
TU001	TUNER UNIT TEDH9X203A.	4835 210 47109

MUT CBA

	MUT CBA	
	MUT CBA.	0000 ESA 03374
C552	FILM CAP.(P) 0.1mF/50V ±5%	4835 122 47451
C553	ELECT 2.2mF/50V ±20% LL.	4835 124 47183
C555	ELECT 47mF/35V ±20%.	4835 124 97066
C556	ELECT 1000mF/25V ±20%.	4835 124 47007
C558	CER CAP.(AX) 0.01mF/16V ±10% (Y) . . .	4835 122 47552

S = Safety Part Be sure to use exact replacement part.

C559	ELECT 100mF/35V ±20%	4835 124 47284
C560	FILM CAP.(P) 0.027mF/50V ±5%	4835 121 47576
C572	METAL FILM. 0.33m/F200V ±5%.	4835 121 47639
C574	ELECT 4.7m/F250V ±20%.	4835 124 47465
C577	FILM CAP.(P) 0.01mF/50V ±5%.	4835 121 47461
C578	ELECT 47mF/35V ±20%.	4835 124 97066
C580	METAL FILM. 0.0082m/F1.6kV ±5%	4835 121 47491
C584	ELECT 1m/F160V ±20%.	4835 124 47516
C591	ELECT 1m/F50V ±20% H7.	4835 124 47045
C592	ELECT 47m/F35V ±20%.	4835 124 97066
C594	ELECT 10mF/160V ±20%	4835 124 47742
CN571	CONNECTOR BASE 5P RTB-1.5-5P	J3RT C05 JG001
D552	RECTIFIER DIODE ERA15-02	4835 130 37515
D571	FAST RECOVERY DIODE ERB44-02	4835 130 37944
D572	RECTIFIER DIODE ERA22-02	4835 130 37788
D573	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
D584	SWITCHING DIODE 1N4148	4835 130 37048
D585	ZENER DIODE MTZJT-775.1B	4835 130 37964
D591	ZENER DIODE MTZJT-7736B.	4835 130 37785
D593	SWITCHING DIODE 1N4148	4835 130 37048
D595	ZENER DIODE MTZJT-7720B.	4835 130 37965
D596	SWITCHING DIODE 1N4148	4835 130 37048
D597	SWITCHING DIODE 1N4148	4835 130 37048
D598	RECTIFIER DIODE ERA22-02	4835 130 37788
IC551	VERTICAL OUTPUT IC LA78040	4835 209 47503
L505	CHOKE COIL 47UH-K.	4835 157 58208
572	INDUCTOR 33UH-K-5FT.	4835 157 57702
Q571	H. OUTPUT+C1372 2SD2627LS-FEC-YB11 NPN	4835 130 48195
Q572	H. DR 2SC1627Y-TPE2 NPN.	4835 130 48141
Q591	SWITCHINGKTC3199(GR) NPN	4835 130 47914
R542	PCB JUMPER D0.6-P12.5.	0000 0JW 12.5T
R544	CARBON RES. 1/4W ±5% 10kohm.	4835 110 57026
R551	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R552	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R556	CARBON RES. 1/4W ±5% 4.7ohm.	4835 110 57212
R557	CARBON RES. 1/4W ±5% 470ohm.	4835 110 57167
R558	CARBON RES. 1/4W ±5% 8.2kohm	4835 110 57264
R559	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R560	CARBON RES. 1/4W ±5% 2.7kohm	4835 110 57006
R561	CARBON RES. 1/4W ±5% 4.7kohm	4835 110 57051
R562	CARBON RES. 1/4W ±5% 2.7ohm.	4835 110 57234
R565	CARBON RES. 1/4W ±5% 3.9ohm.	4835 110 57281
R566	CARBON RES. 1/4W ±5% 3.9ohm.	4835 110 57281
R570	CARBON RES. 1/4W ±5% 3.9ohm.	4835 110 57281
R573	CARBON RES. 1/4W ±5% 470ohm.	4835 110 57167
R574	FIXED METAL OXIDE FILM RES. 2W ±5% 1koh	4835 116 57057
R575	FIXED METAL OXIDE FILM RES. 2W ±5% 1koh	4835 116 57057
R576	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R577	CARBON RES. 1/4W ±5% 560ohm.	4835 110 57052
R578	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R580	CARBON RES. 1/4W ±5% 47ohm	4835 110 57019
R581	CARBON RES. 1/4W ±5% 1ohm.	4835 110 57229
R582	CARBON RES. 1/4W ±5% 1ohm.	4835 110 57229
R583	FIXED METAL OXIDE FILM RES. 1W ±5% 1.8o hm.	4835 116 57073
R584	CARBON RES. 1/4W ±5% 1kohm	4835 110 57025
R585	CARBON RES. 1/4W ±5% 8.2kohm	4835 110 57264
R586	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R587	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R588	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R589	CARBON RES. 1/4W ±5% 47ohm	4835 110 57019
R591	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R592	CARBON RES. 1/4W ±5% 180kohm	4835 110 57259
R593	CARBON RES. 1/4W ±5% 56kohm.	4835 110 57213
R594	CARBON RES. 1/4W ±5% 56kohm.	4835 110 57213
R596	CARBON RES. 1/4W ±5% 2.2kohm	4835 110 57079
R597	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R598	CARBON RES. 1/4W ±5% 22kohm.	4835 110 57038
R599	CARBON RES. 1/4W ±5% 5.6kohm	4835 110 57304
T571	FLYBACK TRANS BSC25-2049S.	4835 140 67198
T572	H0RIZONTAL DR TRANS LP2-004.	4835 148 87394
BC571	BEAD INDUCTOR FBA04HA600VB-00.	LLBF 00S TU026
CL501A	LEADohmIRE 3P 320MM.	WX1T 510 0-001
CL502A	LEADohmIRE 6P 290MM.	WX1T 510 0-003
CL503A	LEADohmIRE 7P 480MM.	WX1T 510 0-004
DB2	13V H/V HEAT SINK(PDX)	0000 EM4 05399
DL2	B-TITE SCREW 3X8 BIND + CHROME	0000 GBM B3080
DS1	SHEET POLYETHYLENE	0000 VM3 01906

CRT CBA

	CRT CBA	
C501	CER CAP.(AX) 270pF/50V ±10% (P). . . .	4835 122 47122
C502	CER CAP.(AX) 270pF/50V ±10% (B). . . .	4835 122 47122
C503	CER CAP.(AX) 270pF/50V ±10% (B). . . .	4835 122 47122
C504	ELECT 47mF/35V ±20%.	4835 124 97066
C507	ELECT 1mF/50V ±20%	4835 124 47045
C510	CER CAP. 1000pF/2kV ±10% (B).	4835 122 47551
CN501	PIN CONNECTOR 005P-5100.	JTEA 001 TG001
D501	SWITCHING DIODE 1N4148	4835 130 37048
D502	SWITCHING DIODE 1N4148	4835 130 37048
D503	SWITCHING DIODE 1N4148	4835 130 37048
L501	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
Q501	RED AMP 2SC3468(D)-AE NPN.	4835 130 47981
Q502	GREEN AMP 2SC3468(D)-AE NPN.	4835 130 47981
Q503	BLUE AMP 2SC3468(D)-AE NPN	4835 130 47981
R501	FIXED METAL OXIDE FILM RES. 1W ±5% 15ko hm.	4835 116 87019
R502	FIXED METAL OXIDE FILM RES. 1W ±5% 15ko hm.	4835 116 87019
R503	FIXED METAL OXIDE FILM RES. 1W ±5% 15ko hm.	4835 116 87019
R504	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R505	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R506	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R507	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R508	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R509	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R510	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R511	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R512	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R513	CARBON RES. 1/4W ±5% 6.8kohm	4835 110 57193
R514	CARBON RES. 1/4W ±5% 1.5kohm	4835 110 57186
R515	PCB JUMPER D0.6-P5.0	0000 00J W5.0T
R516	CARBON RES. 1/4W ±5% 15ohm	4835 110 57177
R517	CARBON RES. 1/4W ±5% 820ohm.	4835 110 57059
R518	CARBON RES. 1/4W ±5% 15ohm	4835 110 57177
R519	CARBON RES. 1/4W ±5% 820ohm.	4835 110 57059
R520	CARBON RES. 1/4W ±5% 15ohm	4835 110 57177
R521	CARBON RES. 1/4W ±5% 820ohm.	4835 110 57059
R531	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R532	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
R536	CARBON RES. 1/4W ±5% 100kohm	4835 110 57185
JK501	CRT SOCKET ISMS02S	4835 265 97453
WH501B	WIRE HOLDER 3P HWT0200-03.	XW0H T03 C7001
WH502B	WIRE HOLDER 6P HWT0200-06.	XW0H T06 C7001
WH503B	WIRE HOLDER 7P HWT0200-07.	XW0H T07 C7001
WH504B	WIRE HOLDER 5P HWT0200-05.	XW0H T05 C7001

Junction A

	Junction A	
C361	CER CAP.(AX) 47pF/50V ±5% (SL)	4835 122 37017
CN503	CONNECTOR 7P TUC-P07X-B1	JCTU S07 TG001
CN504	CONNECTOR 5P TUC-P05X-B1	JCTU S05 TG001
CL504A	LEADohmIRE 5P 270MM.	WX1T 510 0-002

Junction B

	Junction B	
CN502	CONNECTOR 6P TUC-P06X-B1	JCTU S06 TG001

DECK MECHANICAL PARTS

	DECK MECHANICAL PARTS	
2B6	DECK GROUNDING PLATE U21	0000 VM4 10235
2L051	SCREW S-TIGHT M3X6 BIND HEAD+.	0000 GBM S3060
B1	CHASSIS ASSEMBLY MK9	0000 VSA 09994
B2	CYLINDER ASSEMBLY MK9 NTSC 2HD SQPB. .	4835 691 27317
B3	LOAD MTR ASSEMBLY MK9.	4835 361 27165
B4	L MTR HOLDER MK9	0000 VM3 03975
B8	PULLEY ASSEMBLY MK9.	4835 528 87057
B9	MOVING GUIDE S PREPARATION MK9	0000 VSA 09985
B10	MOVING GUIDE T PREPARATION MK9	4835 464 57558
B11	LOAD ARM T ASSEMBLY MK9.	4835 464 57533
B12	LOAD ARM S ASSEMBLY MK9.	4835 464 57532
B27	TENSION LEVER SUB ASSEMBLY MK9	4835 464 57546
B31	AC HEAD ASSEMBLY MK9	4835 249 97072
B32	REEL T ASSEMBLY MK9.	4835 464 57542
B35	TAPE GUIDE ASSEMBLY MK9.	4835 464 57545
B37	CAPSTAN MTR F2QSB31.	4835 361 27164
B38	MODE LEVER A ASSEMBLY MK9 90	4835 464 57536
B46	REV SPRING MK9	0000 VM4 10019
B52	CAP BELT MK9	4835 358 37157
B73	FE HEAD(MK9) HVFHP0041A.	4835 249 97073
B74	PRISM 2 MK9.	4835 402 97838
B121	WORM MK9	4835 522 37386
B126	PULLEY MK9	4835 528 87056
B133	IDLER ASSEMBLY MK9	4835 464 57531
B148	TG CAP MK6	4835 402 97804
B300	FL ASSEMBLY MK9.	4835 130 97111
B303	F DOOR OPENER MK9.	4835 402 97833
B304	DOOR OPENER A MK9.	4835 402 97834
B308	SLIDER SHAFT MK8	0000 VM4 09335
B313	C.DR SPRING MK9.	0000 VM4 10039
B319	CASSETTE SPRING MK8.	0000 VM4 09333
B339	REEL S ASSEMBLY MK9.	4835 464 57541
B344	CASSETTE GUIDE R MK9	4835 402 97829
B345	CASSETTE GUIDE L MK9	4835 402 97828
B347	GUIDE HOLDER MK9	0000 VM3 03856
B350	SLIDER GEAR MK8.	4835 522 37368
B352	C DR LEVER MK9	0000 VM3 03857
B354	SLIDER R MK9	0000 VM2 02617
B355	SLIDER L MK9	0000 VM2 02616
B359	CLEANER LEVER MK9	
B360	CLEANER ROLLER MK9	
B361	CL POST MK9.	0000 VM4 10031
B361	CLEANER ASSEMBLY MK9	

S = Safety Part Be sure to use exact replacement part.

B401	VH CONNECTOR 4A MK9.	0000 VM3 03925
B402	VH CONNECTOR 4B MK6.	0000 VM4 07671
B404	ACH CONNECTOR B(9P) MK9.	0000 VM4 10149
B410	PINCH ARM(A) ASSEMBLY MK9.	4835 464 57537
B411	PINCH SPRING MK9	0000 VM4 10290
B414	M BRAKE S ASSEMBLY MK9	4835 464 57534
B416	M BRAKE T ASSEMBLY MK9	4835 464 57535
B417	TENSION SPG MK9.	0000 VM4 10070
B420	REC ARM MK9.	4835 402 97839
B421	REC ARM SPRING MK6	000V M40 7708D
B423	CYLINDER SHIELD MK9.	0000 VM3 03934
B425	LOCK LEVER SPRING MK9.	0000 VM4 10038
B426	KICK PULLEY MK9.	4835 528 87055
B427	KICK SPRING MK9.	0000 VM4 10025
B472	SLIDER R ASSEMBLY MK9.	4835 464 57544
B473	SLIDER L ASSEMBLY MK9.	4835 464 57543
B475	BT ARM ASSEMBLY MK9.	4835 464 57528
B476	REC ARM ASSEMBLY MK9	4835 464 57539
B480	PINCH ARM(B) ASSEMBLY MK9.	4835 464 57538
B481	C.DR SUB GEAR MK9.	4835 522 37384
B482	CASSETTE PLATE MK9	4835 466 97137
B483	LOCK LEVER MK9	4835 402 97836
B484	REEL SHAFT MK9	0000 VM4 10052
B485	INSULATION CAP B MK9	0000 VM4 10155
B487	BAND BRAKE MK9	4835 466 47056
B488	MODE LEVER A MK9	4835 402 97837
B489	FF RACK MK9.	0000 VM3 03874
B490	FF RACK SPG MK9.	0000 VM4 10074
B491	CAM GEAR(A) MK9.	4835 528 37042
B492	MODE GEAR MK9.	4835 522 37385
B493	C DR GEAR MK9.	4835 522 37383
B494	DOOR OPENER B MK9.	4835 402 97832
B495	FIRST GEAR MK9	4835 402 97835
B496	SECOND GEAR MK9.	4835 402 97841
B498	M LEVER HOLDER MK9	0000 VM3 03976
B499	T LEVER HOLDER MK9	0000 VM3 03871
B500	CENTER PULLEY MK9.	4835 528 87054
B501	WORM HOLDER MK9.	0000 VM3 03974
B502	CAM GEAR(B) MK9.	4835 528 37043
B504	P.S.W F 6*2.55*0.5	000V M40 2629A
B505	P.S.W CUT 1.6X4.0X0.5T	000V M40 8485A
B506	INSULATION CAP A MK9	0000 VM3 04051
B507	REELohmASHER MK9 5*2.1*0.5	0000 VM4 10058
B508	S BRAKE SPG MK9.	0000 VM4 10066
B509	MODE LEVER HOLDER A MK9.	0000 VM3 04050
B511	JOINT SPRING MK9	0000 VM4 10144
B513	CAMohmASHER MK9 8*3.1*0.5.	0000 VM4 10232
B514	SCREW:SLIDER R MK7	0000 VM4 08853
B516	REELohmASHER MK9 5*2.1*0.5	0000 VM4 10058
B517	P.S.W F 6*2.55*0.5	000V M40 2629A
B518	P.S.W F 6*2.55*0.5	000V M40 2629A
B519	P.S.W F 6*2.55*0.5	000V M40 2629A
B520	T BRAKE SPG MK9.	0000 VM4 10067
B521	SOFT SPG MK9	0000 VM4 10079
B522	TG POST ASSEMBLY MK9	4835 464 57547
B523	FIRST POST ASSEMBLY MK9.	0000 VSA 10062
B524	MTR PCB ASSEMBLY(M) MK9.	0000 VSA 10063
B524	MTR PCB ASSEMBLY(S) MK9.	0000 VSA 10064
B525	LDG BELT MK9	4835 358 37158
B526	E RING	0000 0EE K0030
B530	REEL SPACER MK9 5.7*2.7*0.5.	0000 VM4 10293
B531	JOINT SCREW MK9.	0000 VM4 10292
B532	JOINT HOLDER A MK9	0000 VM4 10246
B533	JOINT HOLDER(B) MK9.	0000 VM4 10247
B534	STOP RUBBER MK9.	0000 VM4 10330
B540	REELohmASHER MK9 5*2.1*0.5	0000 VM4 10058
B541	REELohmASHER MK9 5*2.1*0.5	0000 VM4 10058
L1051	SCREW S-TIGHT M2.6X6 PAN HEAD +.	0000 GPM S9060
L1053	SCREW PRISM MK7.	0000 VM4 09038
L1081	SCREW S-TIGHT M3X6 BIND HEAD+.	0000 GBM S3060
L1101	SCREW S-TIGHT M3X6 BIND HEAD+.	0000 GBM S3060
L1151	SCREW SEMS M3X4 PAN HEAD +	0000 CPM 33040
L1191	SCREW S-TIGHT M2.6X10ohmASHER HEAD+.	0000 GCM S9100
L1321	SCREW P-TIGHT M3X6 BIND HEAD+.	0000 GBM P3060
L1341	SCREW P-TIGHT M2.6X6 BIND HEAD+.	0000 GBM P9060
L1342	SCREW P-TIGHT M2.6X6 BIND HEAD+.	0000 GBM P9060
L1406	SCREW S-TIGHT M2.6X4 PAN HEAD +.	0000 GPM S9040
L1410	SCREW S-TIGHT M3X6 BIND HEAD+.	0000 GBM S3060
L1450	SCREW SEMS M2.6X5 PAN HEAD+.	0000 CPM 39050
L1460	ADJUST SCREW M2.6X6(SOD)	0000 VM4 09436
L1461	SCREW P-TIGHT M2.6X6 CUP HEAD+	0000 GCM P9060
L1462	SCREW P-TIGHT M2.6X12 PAN HEAD+.	0000 GPM P9120
L1463	SCREW S-TIGHT M2.6X4 BIND HEAD+.	0000 GBM S9040
L1464	SCREW P-TIGHT M2.6X8 PAN HEAD+	0000 GPM P9080
L1465	SCREW S-TIGHT M2.6X4 BIND HEAD+.	0000 GBM S9040
L1466	SCREW S-TIGHT M3X6 BIND HEAD+.	0000 GBM S3060
L1467	SCREW P-TIGHT M3X10ohmASHER HEAD+.	0000 GCM P3100
L1468	SCREW S-TIGHT M2.6X6 PAN HEAD +.	0000 GPM S9060
L1469	SCREW S-TIGHT M2.6X6 PAN HEAD +.	0000 GPM S9060
L1470	SCREW P-TIGHT M2.6X8 PAN HEAD+	0000 GPM P9080
L1471	SCREW S-TIGHT M2.6X6 BIND HEAD+.	0000 GBM S9060
L1475	SCREW S-TIGHT M2.6X6 PAN HEAD +.	0000 GPM S9060

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CABINET PARTS

	CABINET PARTS	
A1X	FRONT CABINET ASSEMBLY	4835 443 47633
A1-2	CONTROL PLATE T5112UN.	4835 443 67484
A1-3	BRAND PLATE.	4835 459 17605
A1-4	CASSETTE DOOR.	4835 443 67482
A1-5	DOOR SPRING.	4835 492 97212
A2	REAR CABINET	4835 443 47635
A3	RATING LABEL	0000 EM4 05604
A4	POP LABEL.	0000 EM4 05605
B1	TENSION SPRING B0080B0:EM40808	4835 492 37025
B2	CRT MOUNTING SCREW B0030U1:K42419.	0000 08A 00083
B3	SHIELD PLATE (Z9 13V).	0000 EM4 05351
DB1	H/V PCB HOLDER T5100UA	0000 EM2 01156
DL1	SCREW P-TIGHT 3X10 BIND HEAD	0000 GBU P3100
L1	SCREW P-TIGHT 4X18 BIND HEAD +	0000 GBM P4180
L2	SCREW TAPPING M4X14.	0000 DBU 14140
L3	SCREW C-TIGHT M3X4 BIND HEAD+.	0000 GBM C3040
L4	SCREW P-TIGHT 3X10 BIND HEAD	0000 GBU P3100
S1	CARTON	0000 EM4 05606
S2	STYROFOAM TOP ASSEMBLY	0000 EM4 05607
S3	STYROFOAM BOTTOM ASSEMBLY.	0000 EM4 05608
S6	SET SHEET:800X1500	0000 EM4 02369
TB1	TRAY CHASSIS	0000 EM0 00379
TB2	TOP SHIELD	000E M30 1319E
TB3	HEAD SHIELD.	0000 EM4 05408
TB4	BOTTOM SHIELD.	0000 EM4 05402
TB5	HOLDER SENSOR.	0000 VM3 04011
TB8	SPEAKER HOLDER	0000 EM2 01157
TB9	13" HEAT SINK.	0000 EM4 05409
TB10	RCA HOLDER	0000 EM4 05407
TB11	CLOTH (10X30XT0.5)	0000 EM4 04486
TB12	CRITICAL PARTS WARNING LABEL	0000 024 LH199
TL1	SCREW P-TIGHT 3X12 WASHER HEAD	0000 GCM P3120
TL2	SCREW B-TIGHT 3X8 BIND HEAD.	0000 GBM B3080
TL3	SCREW S-TIGHT 3X4 BIND HEAD.	0000 GBM S3040
X1	POLYETHYLENE	0000 0Z2 23380
X2	OWNER'S MANUAL	00IB 818 6E001
X3	REMOTE CONTROL UNIT 512/ERC001/N0314UD	4835 218 37272
X4	DRY BATTERY R6P UM3.	4835 138 17012
X8	SERVICE CENTER MAP	0000 VMN 01909
X9	REGISTRATION CARD.	0000 EMN 01669
X10	SERVICE CONTRACT LABEL	0000 EMN 01624
X11	IMPORTANT SAFEGUARDS PCEC:00EL4496E006	0000 EMN 01233
X12	SERVICE CONTRACT CARD.	0000 EMN 01623
X13	CATALOG.	0000 EMN 01486
B359	CLEANER LEVER MK9.	4835 402 97831
B360	CLEANER ROLLER MK9	4835 464 57529
B529	CLEANER ASSEMBLY	0000 VSA 10119
V501	CRT A34KPU02XX	4835 131 97015
L551	DEFLECTION YOKE.	4835 150 17162
L551	DEFLECTION YOKE for CRT A34LEX10X.	4835 150 17171
CL802	WIRE ASSEMBLY 2P/150	WX1B 590 0-001
DG601	DEGAUSSING COIL F-016.	4835 157 58157
SP801	SPEAKER S08F02B.	4835 240 17019